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THE

MEDICAL JOURNAL OF AUSTRALIA

VOL. I.—10TH YEAR. SYDNEY: SATURDAY, FEBRUARY 3, 1923. No. 5.

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THE AIMS AND IDEALS OF ANTE-NATAL WORK.[1]

BY A. M. WILSON, D.S.O., M.D., B.S.,
Honorary Obstetrical Surgeon, Women's Hospital, Melbourne.

THE ideal result of any obstetrical case is a healthy mother who is able to nurse her baby and who is able to resume her ordinary household duties after the puerperium and a healthy baby which commences life with every prospect of being able to compete successfully in the struggle for existence.

Unfortunately in many cases the ideal is far from being realized. From June, 1919, to June, 1920, 37,329 babies were born in Victoria, but the deaths of one hundred and fifty-four women were recorded as being due to accidents of child-birth—a mortality of about 4‰. These figures probably under-estimate the actual percentage, as undoubtedly many deaths, either directly or indirectly due to the confinement, are registered as occurring under other conditions.

A consideration of the number of occupied gynæcological beds at the various metropolitan hospitals, of the number of gynæcological operations performed in private practice and of the number of women who are more or less permanently incapacitated by child-birth and who do not require surgical intervention, shows that those women who are fortunate enough to escape death at their confinements, are by no means immune from many ill-effects resulting therefrom. The child's advent is made under most inauspicious circumstances. During the period mentioned 1,115 still-births were recorded—a mortality of 3%. No less than 1,110 infants died within the first month, the majority of deaths being due to injuries sustained at birth. So that 6% of all babies born were still-born or did not survive the first month.

Of the infants that survive, many are seriously handicapped by hereditary taints and birth injuries. With regard to the former the disability of the congenital syphilitic and the defective vision resulting from gonococcal ophthalmia need special mention. To enumerate the birth injuries would take too long, but those deserving special attention are the injuries to the nervous system (both central and peripheral) giving rise to paralysis, mental deficiency and epilepsy.

The actual result is thus far removed from the ideal. The aim of ante-natal work is to suggest means whereby the real can be made more nearly to approximate to the ideal. In these days, when the rights of the individual are so jealously guarded, it is too much to hope that before any marriage can be celebrated the contracting parties should present

[1] Read at a meeting of the Section of Preventive Medicine of the Victorian Branch of the British Medical Association on July 8, 1922.

certificates of health, but it would be of immense benefit to the community if the parents of prospective partners were more diligent in inquiring after health and mode of life than after bank balances and property.

Our aim, however, must be to solve the problem as it stands before us to-day. The solution undoubtedly lies in ante-natal care, including the "careful" management of labour, and also in post-natal care of both mother and child. The word "careful" has been used advisedly, as in the art of obstetrics, carefulness counts much more than skilfulness. Ante-natal care should not be limited to hospital practice alone; there is much greater scope in private practice and the general public is now becoming educated to expect and appreciate it. The expectant mother should be encouraged to visit her medical adviser or to report to some ante-natal clinic as soon as she suspects pregnancy. Her adviser at the first visit should spend considerable time endeavouring to obtain her complete confidence, pointing out to her the necessity of ante-natal care, undertaking from then on to advise her in all matters relating to her pregnancy and assuring her that each subsequent visit would not be charged to her account, as the consultation was arranged so that her adviser could ascertain if the course of the pregnancy was progressing satisfactorily. Many patients do not visit their medical attendants, even when there is urgent need, because they fear that the extra visits will result in a greatly increased fee when the account is presented.

When the patient first presents herself, it is most important to investigate her general health, leaving the more intimate examination of the pelvis until the pregnancy is further advanced. Some patients under routine examination will prove quite unfitted to go through the strain of pregnancy. An examination of the urine and blood pressure and an investigation of the cardiac and pulmonary condition of the patient will in many cases prove to be of the greatest value in diagnosing conditions arising later in the pregnancy. Her previous obstetrical history should be carefully noted. It is most disconcerting to attend a multipara during a difficult confinement and to discover later that her previous children were very small and premature. Time can be spent most advantageously giving the patient instructions as to the ordinary hygiene of pregnancy, mode of life and manner of dress, management of diet and bowels, care of the breasts and nipples *et cetera*, not omitting to advise her to consult her dentist and to have any carious teeth treated. Instructions about diet are of the greatest importance. In comparing the statistics of Australian and English maternity hospitals, one cannot fail to be impressed by the greater frequency and severity of the toxæmias of pregnancy in this country. Dietetic influences are apparently largely responsible for this. All patients should be instructed not to take excessive quantities of food, especially milk, because excess frequently causes large babies and consequent dystochia. Copious drafts of water are of the greatest value. Limitation of the protein diet (especially of red meat) in the latter months of pregnancy is important.

The Toxæmias of Pregnancy.

Having discussed the problem on general principles, some remarks will be made on the toxæmias of pregnancy. One-third to one-half (varying in different years) of the maternal mortality and about one-twelfth of the fœtal mortality can be ascribed to this cause.

The toxæmias of the early months, especially *hyperemesis gravidarum*, are usually obvious and amenable to treatment. In some cases, however, defeat must be acknowledged and it is essential to empty the uterus before the patient is *in extremis*. Jaundice, hæmatemesis and a pulse rate of over one hundred and twenty are not indications to evacuate the uterus; they are signs that the most favourable time for evacuating the uterus is already past, that whatever course of treatment is adopted, the patient's condition is extremely grave. It is important to note that the patient's condition usually does not improve in this condition, even after death of the fœtus *in utero*. I have seen several cases where the mother's life has been sacrificed in persistent attempts to save a fœtus, which, as subsequent events have proved, had died *in utero* some time previously. One of the most important branches of ante-natal care is in relation to the later toxæmias of pregnancy. This is not the time nor the place to enter into a dissertation on the theories of causation of these toxæmias, but it would not be amiss to remark that from a pathological point of view the toxæmic condition is manifested in every organ of the body, the brunt of the toxin falling with different severity on various organs. With such a toxæmic condition the types are varied. The following varieties may be recognized: renal, hepatic, cardiac, pulmonary, cerebral, uterine.

In the renal type there is albuminuria, variation in the quantity of urine, usually an increase in blood pressure and so forth. The final stage results in that condition for which the term eclampsia should be reserved, *id est*, convulsions, coma, death.

In the hepatic type there is acetonuria, tachycardia and vomiting. The final stages are characterized by jaundice, hæmatemesis and death.

In regard to the cardiac type, it may be said that many cases of cardiac failure are due to toxæmia. A heart lesion with good compensation will not in many cases affect the pregnant woman, but if any toxæmia is superimposed, the compensation fails and all symptoms and signs of heart failure develope.

In the pulmonary type the onset is heralded by laryngitis and bronchitis.

In the cerebral type the patient suffers from severe headaches and sometimes mental aberration.

The uterine type results in the accidental hæmorrhage, though there is still some doubt as to whether this group should be classified with the toxæmias.

The subsequent remarks will be confined to the first and second types, the renal and hepatic, as the four other types show certain symptoms and signs in common with those two. Acute fulminating eclampsia is occasionally seen, but the majority of cases show definite premonitary signs, if they are

carefully looked for. These cases can be compared with the perforation of a gastric or duodenal ulcer. The perforation is acute, but the predisposing cause has been present for some time. The mortality of these cases of eclampsia is appalling. During the last fourteen years at the Women's Hospital, the maternal mortality was 25%, the fœtal 50%. Here it may be said that this mortality is not due to the fact that the Cæsarean operation has been performed on some of these women. Indeed, both maternal and fœtal mortalities after operation have been slightly less than in those patients treated by conservative measures. In this type of toxæmia those patients receiving ante-natal care would obtain treatment in the early stage, usually with highly successful results. If there were no response to treatment, labour would be induced.

How are these early signs to be detected? The condition of the urine and blood pressure should be noted at the first visit. Cases of chronic nephritis would be thus diagnosed and valuable data in normal cases would be obtained, which would enable the observer to notice any sign of impending toxæmia occurring later in the pregnancy. A routine examination of the urine should be made when the pregnancy is of six and a half, seven and a half, eight and a half and nine months' duration. Variation of the amount should be noted by the patient. All patients suffering with chronic kidney disease should be instructed to measure the amount of urine passed daily and to report at once any variation. The premonitory signs and symptoms should be explained to each patient and instructions given to her to report at once to the doctor should any of them occur. For the early cases rest in bed, complete starvation for thirty-six to forty-eight hours, with free purgation and ingestion of copious draughts of water, usually results in a rapid improvement. If there is improvement, the carbo-hydrates may be added gradually to the diet and then fats and proteins. If the patient fails to respond, an attempt may be made to carry her along until the child is viable and then to induce labour, but if it is obvious that the patient would run an undue risk by attempting to obtain a viable child, it is better to induce labour, irrespective of the period of pregnancy.

The result of treatment along these lines is uniformly good. No patient receiving ante-natal care at the Women's Hospital has had a convulsion. I have a record of forty-five women suffering from toxæmia of this type, treated by induction of labour within the last five years. In these series there have been two maternal deaths and seven fœtal deaths. These figures contrast very favourably with those quoted for eclampsia. Ante-natal care will practically eliminate the necessity for the Cæsarean operation for this condition.

With regard to the second type of toxæmia, I consider it as one of the most serious complications of pregnancy. Here the obstetrician has but little time to decide the correct line of treatment. If the condition does not yield within a few days to a rigorous treatment of alkalies and carbo-hydrates, the only course is to induce labour. These cases are frequently diagnosed as cholecystitis, cholangitis, gastro-enteritis, acute yellow atrophy of the liver *et cetera*. Every patient suffering from dyspnœa and tachycardia should have her urine tested for acetone. Some women, even on a full diet and in the absence of vomiting, will show acetonuria. This may be regarded as a premonitory sign of this type of toxæmia.

During the last two decades there has been a marked diminution of maternal mortality at child-birth in Victoria. In period 1901 to 1905 the mortality was 60 per 10,000, from 1906 to 1910 47, from 1911 to 1915 43, from 1916 to 1921 40. As has already been stated, one-third to one-half of the total number of maternal deaths is due to toxæmia, so that with efficient ante-natal care the maternal mortality should be still further reduced.

Finally, I should like to quote the concluding paragraph of a very excellent paper in *The British Medical Journal* of May 29, 1920, by Aleck W. Bourne, Obstetric Surgeon to Saint Mary's and Queen Charlotte Hospitals. He writes: "Some cases (of toxæmia) will die—must die—whatever is done for them. No patient can survive if the liver is almost totally destroyed by massive necrosis. But it is in the pregnancy toxæmias that preventive medicine has one of its greatest opportunities. Eclampsia is almost an entirely preventible disease, for its premonitory signs are plain to anyone who will take the trouble to watch for them."

ANTE-NATAL CARE.[1]

BY R. W. CHAMBERS, D.S.O., D.G.O. (DUBLIN), M.D., B.S.,
Honorary Obstetric Surgeon, Women's Hospital, Melbourne.

I HAVE been asked to discuss the value of ante-natal care with regard to pelvic obstruction as a broad heading. Of the value of ante-natal care with regard to this condition there can be no doubt whatever. A careful examination during the pregnancy of the prospective mother will save many women long, tedious labours, with the added risk of numerous vaginal examinations, unsuccessful attempts at delivery, marked laceration of the pelvic floor and the very much greater risk of subsequent sepsis. It will also decrease the number of still-born children, birth palsies and mentally deficient children.

I wish to discuss, first of all, the various conditions which are likely to give rise to difficulty during delivery, if unrecognized and untreated, with subsequent risk to both mother and child, and secondly to point out how, by careful investigation and examination before labour starts, they may be discovered and effectively treated.

It is not so much to the obvious gross conditions as pelvic tumours and severe degrees of pelvic contraction that I wish to draw your attention. These conditions are easily recognized both before and during labour. It is for the certainly far more common and yet often unrecognized conditions that I would ask you to look.

[1] Read at a meeting of the Section of Preventive Medicine of the Victorian Branch of the British Medical Association on July 8, 1922.

Malpresentations.

A common condition giving rise to difficulty is the presence of malpresentations. These, of course, can easily be discovered by ante-natal examination during the last few weeks of pregnancy. Many of these presentations are the result of other conditions, such as contracted pelvis and *placenta prævia*, and their mere presence should make us suspect some cause and try to find out what it is. But, quite apart from these malpresentations, there is one which is of common occurrence and for which no definite cause is frequently found. This is a breech presentation in a *primigravida*. This presentation, which can be easily determined, if left as such, leads to great difficulty during delivery in a large number of instances, a prolonged labour, laceration of the pelvic floor and very often a dead baby. This is the more likely to occur if the patient is an elderly primipara. By external version just before the onset of labour, with the help of anæsthesia, this presentation can usually be converted into a vertex presentation, making things very much easier for both mother and child.

An occipito-posterior position is the other malpresentation which is common and which can be easily determined before the onset of labour, but, as a rule, not as easily after labour starts.

While the uterine muscle is lax, it is easy to determine the position the child occupies *in utero* by abdominal palpation, but when the muscle is tense during the contraction—the abdominal muscles are usually more rigid during labour, even in the intervals between the pains—it is very much more difficult to outline the different parts of the fœtus. Of course, a large number of these posterior positions will of their own accord rotate and become occipito-anterior positions before delivery. But, on the other hand, a certain number do not rotate and then the second stage is prolonged. If we know of the presence of this position, the cause of the delay is usually obvious, but if the condition has not been recognized before labour starts or during the early stages, the cause of the delay may be very much more difficult to determine. Abdominal palpation is more difficult after the *liquor amnii* has drained away and in the presence of the uterine contractions. Very distorted ideas of what the position really is are obtained from vaginal examination at this stage on account of the moulding and often large *caput succidaneum*. Forceps are often applied without any attempt being made to rotate the head, because the condition has not been recognized, with the result of a badly lacerated perineum or failure to deliver.

Post-Maturity.

The next condition that is likely to give rise to difficulty is post-maturity. There is usually the very definite history of long pregnancies and very large children with difficult labours. There is, of course, the difficulty of being able to estimate the period of gestation accurately, especially in a *primagravida*. In patients whose history suggests this possibility, close inquiry should be made and careful examination carried out from time to time. Labour should be induced at the time estimated to be full term. The size of the child and particularly of the head help very considerably in estimating this. In addition, the hardness of the head has to be taken into account, as it becomes less plastic the longer post-maturity lasts.

Contraction of the Pelvis.

The slighter degrees of pelvic contraction often escape recognition. The more evident degrees of contraction often associated with obvious deformities are easily recognized.

The non-rhachitic, flat pelvis and the generally-contracted pelvis occur quite commonly and unless recognized lead to considerable difficulty in delivery.

Even with careful external measurements, the non-rhachitic, flat pelvis may be missed, because of the fact that the intercristal and interspinous measurements are often normal, not only respectively, but also relatively, and the external conjugate is usually only slightly shortened; the last measurement is not always reliable. The pelvis may be regarded as normal in size, but on careful internal measurement the true conjugate may be found to be nine centimetres to nine and a half centimetres instead of ten and a half centimetres to eleven centimetres. By careful vaginal examination often an accessory promontory is found just below the true sacral promontory. This is a further indication of some antero-posterior flattening. When this is felt, the true sacral promontory can usually be felt also. If this can be done without undue effort, it is almost certain that some contraction is present. This will be missed if external measurements are not combined with a careful internal vaginal examination during the ante-natal examination.

The generally-contracted pelvis is more easily recognized from external measurements. It may occur in small women in whom the smallness of the pelvis is relative to the general growth of the skeleton, or it may occur in normal-sized women; it is in the latter that it is more likely to be overlooked.

The last type of pelvic contraction that I would mention is the funnel-shaped pelvis with contraction at the outlet. This, although not common, is perhaps even more dangerous than the other types of contraction. If not recognized before labour starts, it certainly will not be recognized until the second stage has been in progress for a long time. In other words, it is not seen that any obstruction is present early in labour as often as is the case with contraction at the inlet. It is only after an unduly prolonged second stage that it is recognized or after unsuccessful attempts at delivery have been made. In the majority of cases perforation and craniotomy are the only measures left to adopt. This may be missed at the first labour, but should never be missed in subsequent pregnancies if the patient's history is carefully taken and careful measurements made.

From the point of view of the practitioner and the mother and child, not to mention the State, all these varieties of pelvic contractions, which, because they are unassociated with gross disease and because some of the measurements usually made may be normal, are of real importance. It is unfortunate to think that very often they escape detection before labour commences. Sometimes, in addi-

tion, there is the history of several craniotomies without the true state of affairs being recognized. It is essential that the pelvis of every pregnant woman who has not previously had a full-term, normal confinement, should be carefully measured and that the mensuration should take into account not only the inlet, but the outlet. Furthermore, it should never be forgotten that the course of labour and the appropriate treatment will be influenced by the size of the fœtal head and the relative disproportion between this and the pelvic measurements.

Uterine Inertia.

Another condition which is likely to give rise to difficulty, and which ante-natal treatment may help to improve, is primary uterine inertia. This, of course, is due to a large number of conditions, but often no obvious cause can be found. Blair Bell states that the cause of the majority of these cases is insufficiency of pressor substances that stimulate uterine contractions. If this occurs once in a confinement, it is likely to re-occur at subsequent confinements; Blair Bell states that it can be effectively treated during the last few weeks of pregnancy. During this time the uterus is usually sensitive to stimulation and exhibits this fact by contracting. If, however, it is found to be flaccid and sagging at the sides and does not respond to stimulation in a normal fashion, then there is a great possibility of inertia occurring. In conjunction with this it is usually found that the systolic blood pressure is low, from 100 to 110 millimetres of mercury. Blair Bell treats this condition by giving calcium salts and infundibular extract for two or three weeks before the estimated date of labour with satisfactory results. Careful ante-natal examination will reveal all these conditions and appropriate treatment can be adopted with the object of obtaining a live, healthy child with the least risk to the mother. This should be the aim of all those attending confinements.

There should be two examinations made during the course of pregnancy to detect any of the foregoing conditions. The first should be carried out early, when external measurements are taken. A careful vaginal examination and, if necessary, internal pelvimetry are much easier to do at this stage than during the last few weeks of pregnancy.

The value of a carefully detailed history of previous confinements should not be forgotten, but errors are apt to occur if absolute reliance is placed on this, because of the fact that occasionally the other child may have been premature and small and the mother may forget to mention this fact. She may have some contraction present which did not obstruct the small, premature child. Her present pregnancy may go to full term or beyond and the present fœtus will be much larger and meet with definite obstruction.

The second examination should be carried out during the last two or three weeks of pregnancy, particularly in the case of a *primigravida*. At this examination the presentation and position are determined and in a *primipara* the head should be found fixed. If this has not happened, it will often be possible to find some cause that was overlooked at the first examination; with proper treatment a difficult labour will be avoided. Malpresentations can be corrected and the midwifery part of our practice will be made very much freer from worry and anxiety as to what is going to happen.

The Abuse of Forceps.

Lastly, I would like to draw attention to the dangers resulting from the indiscriminate use of the forceps. In a very large number of cases where difficulty is met in forceps delivery, it is because they have been applied too soon, that is, before the head is well down in the pelvis and before the *os uteri* is fully dilated, and not because of pelvic obstruction.

As the result of this attempt to extract early and save time, the blades of the forceps are not fitted properly to the head. There is a risk of them slipping, with danger of damaging the maternal soft parts. The head is dragged down through the pelvis often partially flexed and in wrong diameters. There is risk of fracture of the fœtal bones of the skull, cerebral hæmorrhage or severe cerebral compression, with a weak, exhausted baby on delivery or one which will develope epilepsy or similar conditions later in life, or a dead baby.

The risk to the mother is a badly torn cervix, with perhaps tearing of a large vessel and loss of much blood. If this does not happen, a large, open tear may be left, which is open for infection during the puerperium. Usually a low grade of sepsis supervenes, with infection of the parametrium in the regions of the cervix, injury to the supports of the uterus and the risk of prolapse later in life. Tweedy, of Dublin, goes to the extent of stating that in his opinion nearly all the cases of prolapse arise from the application of forceps before the *os uteri* is fully dilated, with bad tearing of the cervix and injury to the parametric support of the uterus.

ANTE-NATAL NOTES.[1]

BY ROBERT FOWLER, M.D., F.R.C.S.,
Obstetric Surgeon, Women's Hospital, Melbourne.

THIS section of the Victorian Branch of the British Medical Association should never lack disciples whilst obstetric practitioners exist. But one experience of any of the obstetric tragedies is quite sufficient to make us willing subscribers to the doctrine: "Prevention is better than cure."

The enforcement of the aseptic ritual upon our labour wards was a great triumph for preventive medicine, but even this achievement is likely to be eclipsed by ante-natal prophylaxis. Herein lies our salvation in the management of eclampsia, contracted pelvis and many another of the sinister accompaniments of the puerperal state.

The aim of the ante-natal worker is the efficient pilotage of the puerperal woman through actual or

[1] Read at a meeting of the Section of Preventive Medicine of the Victorian Branch of the British Medical Association on July 8, 1922.

potential dangers, culminating in the birth of a healthy, viable child.

It is customary to classify diseases occurring during pregnancy into those peculiar to this state and those that are merely associated with it.

Our attitude towards the former group has been discussed by previous speakers. Towards the latter group it is now my privilege to direct your attention.

To discuss all the diseases that might complicate a pregnancy would be an impossible and useless procedure. Our experience of ante-natal work at the Women's Hospital suggests that the following maladies need emphasis: the venereal diseases, pyelitis and cardiopathy.

The Venereal Diseases.

Syphilis.

When once established gonorrhœa and syphilis are so dissimilar that I am loath to consider them together. The fact, however, that the origin of both is usually venereal leads to a somewhat similar prophylaxis for each. Into the general question of the prophylaxis of venereal diseases I do not propose to enter any more than to say that the investigations of N. H. Fairley and myself indicate that in Melbourne the greater amount of syphilis (and I suspect most gonorrhœa) is contracted by each sex in the pre-marital period and that after marriage, if the disease is still present, it is met with in the latent form.

The importance of syphilis in obstetrics lies in the fact that it is a familial disease. This more or less epigrammatic statement depends upon the phenomenon of placental transmission, whereby syphilis is transmitted from mother to child.

For a detailed study of syphilis from this point of view I shall refer you to an article in THE MEDICAL JOURNAL OF AUSTRALIA (December 24, 1921) or to its epitome which appeared in *The British Medical Journal* (April 1, 1922).

As a central feature the article proposes that, given a reasonably early pregnancy complicated by syphilis, energetic ante-natal treatment will both benefit the mother and guarantee a healthy babe.

The frequency of luetic pregnancies at the Women's Hospital is between 7% and 10%. Furthermore, their usual latency requires a routine Wassermann test as the only means of detecting them all.

In private practice a routine testing of umbilical cord blood is a simple and secret method for revealing instances of familial syphilis.

Gonorrhœa.

The importance of gonorrhœa in obstetrics lies in its relation to *ophthalmia neonatorum*, the prophylaxis of which is mainly dependent, as heretofore, upon Crédé's method, namely, the instillation into each of baby's eyes of one drop of 1% silver nitrate solution at once.

Theoretically ante-natal treatment of maternal leucorrhœa should reduce the incidence of *ophthalmia neonatorum*. Practically, however, maternal gonorrhœa is so often latent and the bacteriological diagnosis is so seldom established from smear preparations that the method is not one of very general application. However, with the improved serological test diagnosis should be facilitated and treatment more accurately controlled.

Pyelitis.

This disease is coincident with pregnancy sufficiently often to have occasioned the term "pyelitis of pregnancy." Since its ætiology is imperfectly understood, a rational prophylaxis is not possible. For those of us who look upon pyelitis, pyelo-cystitis and pyelo-nephritis as expressions of the same disorder and upon the infection as descending or hæmatogenous, it is important to attend to possible primary foci. Suspicion naturally falls upon the inveterate criminals, the teeth, tonsils and appendix.

The importance of pyelitis in pregnancy lies in the exposure of the mother to the risks of renal insufficiency and of septicæmia. Besides which, the fœtus is further imperilled by the occasional necessity of early induction. Since I have witnessed three fatal cases of pregnancy pyelitis in six months, I regard this complication very seriously. The successful management of any disorder implies early diagnosis, satisfactory prognosis and efficient treatment. All of these desiderata are quite difficult of attainment in pyelitis cases and it is only by using the cystoscope that we may be reasonably certain of our ground. The cystoscope may disclose the "silent" pyelitis; it may differentiate acute pyelitis from acute appendicitis; it may distinguish the more chronic forms of pyelitis from typhoid fever and other affections.

When used in conjunction with the cystoscope, the prognostic value of the renal efficiency tests is more precise. Moreover, ureteral catheterization through the cystoscope renders possible therapeutic drainage and lavage of the renal pelvis. The solution for this purpose is 1% silver nitrate solution and the cystoscope I use is the Wolff-Ringleb, indirect, with water distension of the bladder. Luys's direct cystoscope with air distension of the bladder is equally convenient.

Besides these special methods of management in pyelitis we have to consider the curative rôle of drugs, vaccines and induction of labour.

There is only one drug in pyelitis—potassium citrate in large doses. Its immediate effect upon the symptoms is usually so marked as to be almost diagnostic. Let us beware, however, lest its efficacy beguile us into believing that the cure is permanent. Pyelitis has an awkward habit of recurring and for this reason cases should not be lost sight of.

Although a pathogenic colon bacillus is the more usual causative agent, it seems as if the bacteriology of the affection is not constant. In fact, Dr. Mollison has isolated for me on two occasions a member of the paratyphoid group. When a bacteriological diagnosis is established, vaccine therapy should be tried. The maximum effect is obtained by giving autogenous vaccine by the intravenous route. We may commence with fifty millions and be guided by the reaction as to subsequent dosage. We have gained the impression that vaccine treatment is of

benefit in getting rid of bacilluria and in reducing the tendency to recurrence. Miss Williams, of the Hall Institute, has in a few of our cases tested its efficiency by daily estimating the specific agglutinating power of the patient's serum. The results, however, have not been uniform.

If the patient does not improve under a combination of the methods already mentioned or should she come under observation late, induction of labour must then be considered.

Bearing in mind the prominence of urinary stasis as a factor in pregnancy pyelitis, it is not surprising that evacuation of the uterus is effective in giving relief. In cases occurring early in pregnancy every effort should be made to tide the patient over by other means until the fœtus is viable; in cases from the thirty-sixth week onwards no hesitation need be felt about inducing forthwith.

Cardiopathy.

This is a somewhat formidable subject to introduce at this stage of the evening. Do not fear, however, that I shall attempt anything comprehensive. I shall merely raise a few points that may provoke discussion.

Firstly, as regards advising a woman with heart disease against pregnancy. This should be an uncommon procedure and undertaken only in consultation with a cardiologist. If pregnancy is forbidden, explicit instructions in methods of birth control should be given. Neglect of this precaution will almost certainly mean that the next consultation will be obstetrical in character.

In the next place, as regards the cardiopath who comes under your care already pregnant. Everything depends, of course, upon the efficiency or otherwise of the heart. I have formed a rather gloomy and exaggerated idea of the dangers of uncompensated heart disease in pregnancy owing to my experience at the Women's Hospital. Of five patients seen within six months three women died undelivered. The correct management of these cases depends upon precise diagnosis and prognosis in consultation with a cardiologist. With regard to the milder cases of heart failure, no interference with a first pregnancy need be contemplated. Maybe the strain will involve a remote curtailment of the mother's life, but most women would consent to mortgage a year or two for the sake of a baby. Surely in some of these cases it is good practice to substitute Cæsarean section for natural labour, because, not only does it obviate the stress and strain of labour, but it affords an opportunity for concurrent sterilization. If sterilization is undertaken, it is only wisdom for the obstetrician to protect himself with a written authority signed by husband and wife. Spinal anæsthesia is very suitable for operation in these patients, although the majority should stand ether inhalation well.

In another type of case it becomes obvious early in pregnancy that, if allowed to continue, disaster must ensue. Induction being called for, the method adopted is entirely a matter for the obstetrician. In my opinion, the abdominal route has everything in its favour. It is rapid and convenient, saves the patient much exhaustion and, maybe, several administrations of anæsthetics. Moreover, for these patients sterilization is even more necessary than in the previous group.

Personally I do an abdominal hysterotomy in such a case under spinal anæsthesia. With preliminary morphine-scopolamine narcosis, two cubic centimetres of a 4% stovaine solution in normal saline solution injected into the theca between the second and third lumbar spines give a rapid and prolonged anæsthesia up to the ensiform cartilage. Moreover, there is splendid muscle relaxation, no objection to the Trendelenburg position and no after-effects.

Finally, I should like to thank you for the invitation to address you this evening. I trust that our several papers will be provocative of an interesting, critical discussion.

THE USE OF DIGITALIS IN HEART FAILURE.[1]

BY HAROLD RITCHIE, M.B., CH.M. (SYD.).
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Introduction.

IN choosing the subject of the use of digitalis in heart failure, I have been influenced by the desire to offer you some practical subject for discussion. Moreover, so many dreary avenues of empiricism in the treatment of heart disease have been illuminated by recent work on the action of the digitalis bodies as interpreted by the polygraph and the electro-cardiograph that the indications for digitalis therapy are assuming logical and definite shape and now more justly than ever can Osler's saying be quoted: "How he uses it may be taken as a sort of indication of the therapeutic intelligence of the practitioner."

The Therapeutic Effect of Digitalis.

The Effect on the Heart Muscle.

The therapeutic effect of digitalis is achieved by a twofold action—on the heart muscle itself and on the cardio-inhibitory mechanism. The electrocardiographic examination of the digitalized heart indicates that the contractile power of the ventricular muscle is increased, but it is open to question as to whether this is a direct result of the drug on the heart muscle itself or an effect proceeding indirectly from the improved nutrition of the heart muscle arising from the prolongation of ventricular diastole. The prolongation of diastole is partly due to the depressing action of digitalis on the conducting mechanism between the auricles and the ventricles and partly to its power of increasing the tone of the vagi, which also indirectly depresses the conduction of impulses through the auriculo-ventricular bundle. Through a combination of these two properties of digitalis fewer stimuli to contraction are allowed to pass from the auricles to the ventricles, the heart is slowed, diastole is prolonged and the enfeebled cardiac muscle is given a longer period of rest in each cardiac cycle.

The reduction in heart rate accomplished in this way is often of the greatest importance in heart

[1] Being a lecture delivered at the Post-Graduate Course in Medicine in Sydney on January 8, 1923.

failure. Failing heart muscle cries aloud for rest and by the prolongation of diastole this is achieved. Digitalis action is seen in its most beneficent form in disorders of rhythm, such as auricular fibrillation and auricular flutter. In these conditions the drug, by depressing the conductiviity of the auriculo-ventricular bundle in the two ways just cited, prevents a number of the abnormal auricular stimuli reaching the ventricles.

The Effect on the Cardio-Inhibitory Mechanism.

The action of digitalis through the vagus and the auriculo-ventricular bundle in the heart failure of auricular fibrillation and auricular flutter differs, as Lewis has shown, in the varying responses of the ventricles and the auricles. The ventricles are slowed through direct action of the drug on the auriculo-ventricular bundle and also the indirect action of the stimulated vagus on the bundle. The wave-like movements of the auricles on the other hand become more rapid. This paradoxical result is due to the fact that vagal stimulation of the fibrillating auricle by digitalis diminishes the amount and time of contraction of the auricular fibres. In this way the length of the refractory period is reduced, conduction is quickened and the rate of the aberrant circular rhythm of the auricles is increased.

The foregoing remarks apply to the heart exhibiting disorder of rhythm. In the normally beating heart it is often difficult to demonstrate digitalis slowing before symptoms of poisoning are produced. Here, when the reduction of rate occurs, it is brought about by the inhibition by the vagi of the rate of impulse formation, but as it is usually accompanied by toxic symptoms, except apparently in children and patients whose vagus centres are unusually susceptible, it must be conceded that, however desirable, a reduction in rate of normally beating hearts cannot reasonably be expected with therapeutic doses.

The Effect on the Blood Vessels.

The effects on the blood vessels may be subdivided into the effect on (*i.*) blood pressure, (*ii.*) the coronary circulation and (*iii.*) the venous pressure.

For many years high blood pressures were urged as a definite contra-indication to digitalis. It is fortunate that this bogey has been banished. It has been established that in the largest therapeutic dosage, not only does digitalis not raise the systolic pressure, but in many cases of high blood pressure associated with heart failure, both the systolic and diastolic pressures are lowered. When a rise in pressures takes place, it usually occurs in cases in which the pressure is sub-normal; in cases of normal and high blood pressure any rise is transient and negligible.

In so far as the coronary circulation is concerned, there is no evidence of the direct action of digitalis and its congeners on the coronary vessels, whilst there is no demonstrable effect on the venous blood pressure.

The Effect on the Kidneys.

Withering, who introduced digitalis to the profession in 1775, was most strongly impressed by its diuretic action and in the language of the period tells us: "My truly valuable and respected friend, Dr. Ash, informed me that Dr. Cawley, then principal of Brazen Nose College, Oxford, had been cured of an *hydrops pectoris* by an empirical exhibition of the root of the foxglove, after some of the first physicians of the age had declared they could do no more for him."

However, modern research has proved conclusively that none of the digitalis bodies have any primary action on the kidneys. They induce diuresis, sometimes of a most abundant character, solely by improving the circulation. In the words of Eggleston: "It has been observed repeatedly that no diuresis follows the administration of digitalis to normal human beings or to those with heart failure uncomplicated with œdema or serous effusions. . . . . When, however, heart failure is accompanied with œdema, profuse diuresis may follow the administration of digitalis, but this is found to occur only when the heart failure is more or less effectively overcome by the drug and when the heart failure is not affected, no diuresis ensues from its administration. It is clear then that the diuretic action of digitalis in man is essentially secondary to its capacity to relieve heart failure and restore the circulation and when it is effective in œdematous cases of heart failure it is often one of the earliest of the manifestations of the action of the drug."

The Toxic Effects of Digitalis.

By the toxic effects of digitalis are understood those that are harmful, especially to patients suffering from heart failure. One of the greater difficulties in digitalis administration is the narrow margin which divides the optimum therapeutic dose from one which will cause toxic symptoms. In fact, it is at times impossible to obtain one effect without the other, but "the first requisite for the successful employment of digitalis as a remedy is the recognition of its toxic effect, especially of those early effects which serve as indications for the discontinuance of the drug."

Gastric Effects.

The toxic effects of digitalis upon the stomach are amongst the earliest manifestations of over-dosage. There is a period of anorexia and nausea, followed by severe vomiting, which may recur at lengthening intervals for three or four days. For many years such symptoms were attributed to direct irritation of the gastric mucosa by the drug, but recent experiments show that the gastric symptoms arise from impulses from the heart passing by way of the sympathetic and vagus mechanisms to the vomiting centre in the medulla. Therefore, it cannot be emphasized strongly enough that the onset of nausea is a signal that the so-called physiological limit has been reached and the exhibition of the drug should be suspended. If desirable therapeutic results have not been achieved, the drug may be re-employed when the gastric symptoms have subsided, as a second essay is not infrequently successful before vomiting and nausea occur.

Cardiac Effects.

The toxic effects of digitalis upon the heart are the most important, as death is caused by the cardiac phenomena of digitalis poisoning when a lethal dose is administered to animals. When administered to animals, overdoses of digitalis cause premature ventricular contractions (extra-systoles), partial heart block, complete heart block, fibrillation of the ventricular muscle and death.

In the treatment of heart disease by digitalis the commonest toxic phenomena which occur, are (α) the occurrence of ventricular extra-systoles due to the increased irritability of the ventricular muscle and (β) depression of conduction between the auricles and the ventricles, leading to partial or complete heart block.

Premature Contractions or Extra-Systoles.

These are met with in their most characteristic guise as definitely coupled beats—the so-called bigeminal pulse. When auricular fibrillation is present, these premature ventricular contractions are unrecognizable, except when the beats are characteristicaly bigeminal in nature, but in the regularly beating heart the appearance of extra-systoles is readily apparent, both to the finger and the ear.

The amount of digitalis which gives rise to extra-systoles, varies greatly with different patients. They are specially prone to occur early in the administration of the drug in those patients whose hearts are severely damaged by disease, and when they so occur, are of serious prognostic moment. If the bigeminal pulse appears, digitalis should be discontinued at once; indeed, if extra-systoles are frequent after the administration of small amounts of digitalis, it is wise to discontinue or at least diminish the dose. As mentioned before, they indicate an undue irritability of the ventricular muscle; coupled rhythm is compounded of a normal beat and a ventricular extra-systole followed by a prolonged refractory period. Spontaneous extra-systoles so frequently occur in diseased hearts that it is sometimes difficult to be sure during treatment whether they are due to the drug or not, but when doubt exists, the digitalis should be discontinued at once.

Depression of Conduction.

One of the most striking results of the toxic action of digitalis on the heart is depression of conduction of the cardiac impulse from the auricles to the ventricles. In certain conditions of the heart, such as auricular fibrillation, this property of digitalis is of the greatest value, as it blocks the passage of a large number of aberrant and mischievous stimuli from the auricle to the ventricles, slowing the ventricular rate and giving the ventricular muscle rest by prolonging the period of ventricular diastole. On the other hand, it is fraught with danger if unrecognized and may proceed to a partial or even a complete heart block. For ordinary clinical purposes it may be assumed that when a rapidly beating heart is suddenly slowed by digitalis or if an intermittent cardiac rhythm unassociated with premature beats developes, we may assume that some degree of heart block is present and the drug should be withheld at once.

Other Disturbances of the Heart.

Occasionally the regularly beating heart developes auricular fibrillation during the administration of digitalis. When this occurs the drug should be suspended.

Pulsus alternans is a condition in which the regularly beating ventricles contract with alternating force. It is due to a disturbance of the function of contractility, is only met with in seriously damaged hearts and is a sign of ill omen. Occasionally digitalis may give rise to the alternating pulse as a toxic phenomenon, but when it occurs spontaneously digitalis sometimes removes it.

The Use of Digitalis.

The use of digitalis in heart failure is universal amongst civilized poeples. No drug in the pharmacopœia has greater virtues when it is not asked to achieve the impossible. Before discussing the indications for its exhibition, it may be wise to define heart failure. It may be expressed as a congerie of symptoms embracing breathlessness, cough, cardiac pain, weakness, cyanosis and dropsy. In the absence of heart failure in some or other of its forms digitalis does no good, but harm; nor in all forms of heart failure does digitalis prove successful. The most brilliant results are met with in heart failure associated with disorders of rhythm, such as auricular fibrillation and auricular flutter. In auricular fibrillation, as a rule, the ventricles beat rapidly at rates from 120 per minute up to 160 per minute and even faster. The associated heart failure is due to fatigue of the cardiac muscle arising from this rapidity and digitalis, by depressing the conduction of impulses to ventricular contraction from the auricles, slows the heart and gives it rest. Every increase in heart rate is made at the expense of the diastolic period. In the normal ventricular cycle with a heart rate of 60 per minute systole occupies one-third of a second, diastole two-thirds; if the heart rate is 120 each cycle lasts one-half second, systole lasts a quarter of a second and so does diastole. In the words of Lewis: "In the first case the heart works one shift and sleeps for two. In the second work and rest alternate in equal shifts. . . . To the heart foxglove is not tonic, but powerfully hypnotic. It controls the diastoles of the heart; it extends the period of sleep."

Auricular Fibrillation.

Patients with auricular fibrillation vary in their response to digitalis medication. This largely depends upon the cause of the disorder and the age of the patient. The young and middle-aged, whose cardiac condition may be directly attributed to acute rheumatism and whose cardiac rate is rapid, respond most readily. The second group of patients, in which auricular fibrillation occurs, do not benefit to the same degree. They are the elderly arteriosclerotics, in whom cardiac degenerative changes have affected not only the conducting mechanism, but the cardiac muscle itself. In this group the heart rate tends to be slower than in the first, indicating a serious involvement of the conducting mechanism.

The pulse rate in auricular fibrillation is not a dependable guide as to the ventricular rate, which can only be determined by the stethoscope. Not infrequently twenty to thirty ventricular contractions per minute fail to reach the wrist in sufficient strength to be palpable by the finger. The number of these deficient beats is known as the pulse deficit and its disappearance or reduction is an excellent guide for the proper administration of the drug.

The optimum rate of ventricular contraction, as controlled by digitalis, varies with the individual. Many patients seems to be most comfortable at a ventricular rate of seventy to eighty per minute, but others do best at slightly lower or higher levels. This is a matter for individual investigation. Once the heart has been slowed, it is necessary to give digitalis continuously in doses sufficient to parallel its elimination from the body. As a rule this represents from ten to fifteen minims of the tincture thrice daily, but more may be needed.

Indications of excessive dosage in auricular fibrillation have been previously discussed under the heading of the toxic effects of the drug. They may be summed again as coupled rhythm and partial or complete heart block. When such phenomena occur the drug should be suspended.

Auricular Flutter.

Auricular flutter is a condition closely allied to auricular fibrillation, into which it is often converted by digitalis before the normal rhythm is restored. In auricular flutter there is an exceedingly rapid auricular rate associated with varying degrees of heart block at the auriculo-ventricular junction. The auricular rate is usually about three hundred contractions per minute, but as one beat in three or one beat in two reaches the ventricles, the rate of the latter may be one hundred or one hundred and fifty per minute. Now the chief differences between auricular flutter and auricular fibrillation, in so far as the auricles are concerned, are that the wave-like circular oscillation of the auricle is regular and not so rapid in flutter, whilst it is more rapid and completely irregular in fibrillation. When we recall that the vagal action of digitalis on the imperfectly conducting auricle is to reduce the refractory period, thereby tending to shorten the path upon which the wave circulates, we get a glimpse of the mechanism of conversion from flutter to fibrillation.

Flutter in this way may be converted into a persistent fibrillation, but in most cases the fibrillation is transient and the normal cardiac rhythm is restored. Even in cases in which flutter is persistent, digitalis by its action on the auriculo-ventricular mechanism may convert a ventricular rate of one hundred and fifty into a ventricular rate of one hundred or seventy-five per minute. In this way cardiac efficiency is promoted very greatly. All cases of flutter should be thoroughly digitalized.

Paroxysmal Tachycardia.

Paroxysmal tachycardia presents the symptom-complex of the sudden onset of rapid heart rate, ranging from one hundred and fifty to two hundred per minute, terminating after a period of hours or days as suddenly as it began. It arises from the production of cardiac impulses from some focus external to the normal "pacemaker," usually in one of the auricles, but occasionally ventricular in its site. This ectopic focus generates impulses extremely rapidly and temporarily assumes the task of "pacemaker" to the heart. Digitalis is of no value in this condition.

Extra-Systoles.

Extra-systoles are aberrant cardiac contractions arising from some focus in the heart external to the spot in which the normal rhythmical stimuli are generated. Digitalis, as a rule, has little or no beneficial action upon them and whilst their presence does not forbid its use if it is otherwise indicated, they should, if numerous, lead the physician to exercise care in administration, for their presence suggests serious myocardial change when associated with heart failure.

Heart Block.

Heart block may be partial or complete. Digitalis is contra-indicated in partial block, as by its depressing action on the auriculo-ventricular bundle, it tends to make the heart block complete. In complete heart block the auriculo-ventricular bundle is no longer functioning, so that the depressing action on conduction may be disregarded. There are grounds for belief that small doses of the drug increase ventricular efficiency in this condition.

Heart Failure with the Normal Cardiac Mechanism.

In heart failure associated with disorders of rhythm we have seen that improvement in the *status quo* was largely dependent upon the ability of the drug to slow down ventricular action and to give the cardiac muscle rest. In the regularly acting heart the improvement but rarely manifests itself as a diminution in rate. Dyspnœa, cyanosis and œdema are frequently relieved, apparently by the direct action of the drug on the heart muscle. Patients with œdema do better as a rule than those without, but diuresis depends upon the action of digitalis in restoring the balance between the arterial and the venous side of the circulation by its action on the contractility of the ventricles. A good result can always be expected, provided there is enough healthy cardiac tissue left to carry the circulatory load, but in all these cases there comes a time when, sometimes after repeated breakdowns, neither rest, nor drugs, nor aught else avail us.

The myocardial insufficiency of the regularly beating heart does not, as a rule, tolerate such large doses of digitalis as the disorders of conduction. Toxic effects are easily produced and care must be exercised in its administration.

Pulsus alternans, when arising spontaneously, is an indication of serious myocardial damage, especially when associated with high blood pressures. By careful dosage with digitalis the contractility of the muscle can be temporarily restored, though, strangely enough, it may also be produced by overdosage.

Valvular Heart Disease.

Valvular heart disease unaccompanied by heart failure is not an indication for the use of digitalis. Some practitioners still adhere to the doctrine that digitalis is contra-indicated in heart failure associated with aortic regurgitation. In this connexion I would like to quote Christian: "There still lingers the tradition that aortic insufficiency contra-indicates digitalis, because digitalis would prolong diastole and the large regurgitant flow of the blood under these conditions would stop the heart in diastolic paralysis; a good enough theory, only it seems to have no basis in fact."

Disturbances of the Nervous Mechanism.

The heart is, to borrow Sherrington's term, reciprocally innervated; the vagus mechanism is inhibitory, the sympathetic accelerator. At times there is a functional derangement of the nervous balance and the accelerators take charge more or less with the production of persistent tachycardia. For characteristic examples of such conditions we may quote the so-called effort-syndrome or neuro-circulatory asthenia so common after active service and hyperthyreoidism. In both these and allied conditions digitalis is useless.

Digitalis in Infectious Diseases.

Though extensively used, there is little indication that digitalis is of any real value in the failing febrile heart. The one instance in which it may be of use, is pneumonia, in which heart failure is the cause of death. Apparently about 10% of patients with pneumonia develope auricular fibrillation and routine administration of digitalis in moderate doses from the inception of treatment may enable us to support the labouring heart if the need should arise.

Diphtheria is another disease in which the heart is badly buffeted, but electro-cardiographic studies of the diphtheritic heart yield evidence so similar to those afforded by the administration of toxic doses of digitalis that, in the words of Canby Robinson: "It is adding insult to injury to administer the drug to patients with the cardiac complications of diphtheria."

Dosage of Digitalis.

The drug may be administered by the mouth, into the veins, into the muscles or by the rectum. All these methods have had their disciples, but the modern tendency is to depend largely upon oral administration. The physician, having satisfied himself that the use of digitalis is called for, should take Withering's dictum as his guide: "Let the medicine be continued until it either acts on the kidneys, the stomach, the pulse or the bowels; let it be stopped upon the first appearance of any one of these effects." It is very advisable that the physician should accustom himself to the constant use of one of the many preparations of digitalis. Having assured himself of the activity of the preparation he is using, he should cleave to it and no other, because indiscriminate use of varying preparations leads only to therapeutic confusion. In this hospital the tincture is the preparation which is used to the exclusion of all others.

All cases do not call for the production of a digitalis effect with equal urgency, nor do all cases respond with equal readiness to the drug. Hence the indications for dosage vary within considerable limits.

It has been established that the average amount of an average tincture which will bring about a digitalis effect is about two and a quarter minims per pound of body weight. Thus a patient weighing twelve stone would roughly need a little more than six drachms of the tincture to produce a characteristic digitalis action on the heart. The individual doses in which this is given, depends entirely upon the severity of symptoms. When confronted wth a patient in imminent danger of death, the growing hospital practice abroad is to give a third to half of the total calculated therapeutic dose at a single administration, to follow this in from four to five hours with a quarter to a third of the total dose and to give the remainder in a few doses of smaller size at intervals of from four to six hours. By this plan of administration the full effects can be secured in from twelve to thirty-six hours in the majority of cases.

This method is only practicable in hospital, whilst the patient is under constant observation and where clinical observation can be aided by instrumental means. I do not recommend it to you, but I should like to point out that in case of urgency the reproach against digitalis therapy, that the patient may die before it produces any action on the heart, is removed; nor can we doubt that many lives can be saved by this method which were previously forfeit.

Our usual practice is to give fifteen to twenty minims or more every two or three hours till Withering's dictum is fulfilled. In cases of disordered rhythm, slowing of the ventricular rate is usually the first indication of digitalization. Once this reduction of rate has been produced, it will suffice, as a rule, to give fifteen minims thrice daily for a few days. The rate of elimination of digitalis is to all intents and purposes constant; once digitalization is brought about, it is found that on an average twenty to thirty-five minims per day is sufficient to preserve what may be called saturation-point and to maintain the therapeutic effects. The necessity for the continuous administration of such a dose as a part of the after-treatment, cannot be emphasized sufficiently. Half a drachm of tincture of digitalis may be given in three divided daily doses for years without any harm to the heart and with inestimable benefit to the patient, who is preserved as a useful factor in the world's work.

In heart failure associated with the regularly acting heart, more particularly in those with dropsy, the same doses may be given, but with more caution, inasmuch as there are usually present certain myocardial changes which tend to make the heart more susceptible to the toxic effects of the drug.

The tincture of digitalis should be prescribed alone. It is my habit in private practice to order one ounce of the tincture in a Stearns's dropper and to instruct the nurse to drop out so many drops per dose into a wineglassful of water. It should be remembered, if this method is followed, that one drop only repre-

sents about half a minim. It has the benefit of convenience and prevents the depreciation of the tincture which in a few days so readily follows mixing with water, whilst ambulatory patients find they can carry a fortnight's supply in a waistcoat pocket.

Till digitalization has occurred and for a few days afterwards, the patient should be confined to bed; the fluid intake and output should be measured and repeated examination of the heart should be made. In cases of dropsy, in fact, in all cases of congestive heart failure, brisk purgation should precede and accompany the administration of the drug. There is a famous saying: "Digitalis acts best on a falling tide." Neglect of purgation has often been the cause of unsatisfactory digitalis therapy in cardiac œdema.

The congeners of digitalis, strophanthus, squills and the rest are not so readily absorbed, are more irritating and should be discarded. The intravenous use of strophanthin in urgent heart failure, whilst sometimes miraculous in its effect, has produced so many fatalities that it must be regarded as an extremely dangerous remedy.

In conclusion, I would like to re-state the differing action of digitalis in heart failure arising from disturbances of rhythm in which the main value of the drug rests in its power of preventing the conduction of excessive disorderly stimuli from the auricles to the ventricles—in this way giving the heart rest—and the heart failure of the regularly beating heart, in which the drug acts by restoring the balance between the arterial and venous sides of the circulation in virtue of a direct action on the contractile power of the heart.

Reviews.

A PAGE IN THE MEDICAL HISTORY OF THE WAR.

A SPECIAL quality of the late war, one which at the time seemed to mark it out from the ordinary struggles of nations, was a certain strangeness and foreboding—as of an Armageddon—vague, mysterious, final. Time, without haste, but without rest, lifting these mists of uncertainty, discloses at the same time their source, in the unique universality of participation in the actual circumstances of war and, on the other hand, the intensity of concentration of almost every individual in the community, on some very particular aspect of war work. The volume under review is a good illustration of both of these and of their result in experiences of a kind whose unusualness is only now becoming evident. "The Story of the Horton (County of London) War Hospital," told by its Commanding Officer, Lieutenant-Colonel J. R. Lord,[1] belongs to the second stage of historical war literature, when administrative files, having served their purpose and become "dead," enter thereby on immortality as "historical documents" and become available for the writing of books and make possible some preliminary finality of statement and the fitting of individual experiences into the general scheme.

The object of the book, as indicated in the preface, "is threefold. In the first place, it is meant as an appreciation of the services rendered in the interests of the sick and wounded soldiers by a multitude of people, high and low, rich and poor. Secondly, it is thought that many of the former patients would like to have in their possession some memorial of the hospital. And, thirdly, as a record of administrative, medical and surgical work on a large scale."

[1] "The Story of the Horton (County of London) War Hospital, Epsom: Its Conception and Work and Some Reflections," by Lieutenant-Colonel J. R. Lord, C.B.E., M.B., Officer Commanding; 1921. London: W. Heinemann (Medical Books), Limited; Demy 8vo., pp. 264, with illustrations. Price: 12s. net; library edition, 15s. net.

The book is colloquial in style and is divided into two parts. In Part I. the author deals with general history and in Part II. he deals with some special sections of the work in the hospital—the departments of medicine, surgery, the various specialties, auxiliary hospitals, the quarter-master's department and so on. It also contains such matters as transport of the sick and wounded, finance and statistics. The hospital was one of the most considerable of those of a semi-military kind based on pre-existing institutions (in this case on a London County Council asylum) which together made up the prodigious organization required to deal with the 2,655,025 sick and wounded returned from the various seats of war. The particular Australian interest in the book lies in the fact that men from every British dominion, including a large number of Australians, were treated there. As will be seen from quotations given, Colonel Lord leaves them neither unsung nor unhonoured in his story:

"PROPOSED RESERVATION FOR AUSTRALIAN PATIENTS.—By September, 1915, the accommodation at Harefield Hospital, provided for the Commonwealth authorities, proved insufficient, so arrangements were made with the War Office for 1,000 beds to be allotted to Australian patients in or near London. Our share was 500 beds. Medical officers and nursing staff were to be detailed for duty to take charge of them.

"FINAL ARRANGEMENTS FOR AUSTRALIAN PATIENTS.—It was agreed that Australians should be accommodated in wards suitable to their physical state and treated the same as other patients.

"VISIT OF AUSTRALIAN HEADQUARTERS MEDICAL STAFF.—On September 30 I received a telephonic communication from Australian Headquarters that some Australian medical officers were on their way to see me. Late in the afternoon there was a loud rap at my office door and on my exclaiming, "Come in," there entered a procession of tall, great-coated officers, until my office would contain no more, especially of the dimensions of all of my visitors save one. There were a dozen or so of them, mainly colonels or majors, A.A.M.C. Colonel J. F. Flashman was in charge of the party and my office never held such a fine lot of men, either before or since. I was delighted to see them. Some were Headquarters staff; others had recently arrived to take charge of Australian hospitals *et cetera* it was proposed to establish. I told them all about the hospital and afterwards showed them the administration and some of the wards. Their appreciation of all they saw and heard was unbounded and they then and there expressed a wish to take over the whole hospital for Australians. They had the supreme confidence of men used to obtaining what they asked for and when they left I was not at all certain as to what the future of the hospital might be. However, I reckoned that the L.C.C. would have something to say in the matter and derived some comfort from this thought.

"O.C.'S IMPRESSIONS OF THE AUSTRALIAN SOLDIER.—It is convenient here to summarize my impressions of the Australian soldier, especially of the earlier ones to arrive. Most of them were dark, very weather beaten and sundried, loosely built, but powerful men, with sharp features and clean-shaven faces, revealing striking physiognomies. When spoken to individually they replied as men of independence and often in a curiously silky tone. They were obviously cautious and with no intention of being 'had' in any way. The large proportion of them were good fellows when properly treated, but there was a small percentage quite incorrigible and created the opinion among some people that Australian soldiers, as a body, were a bad lot. This certainly was not so. Quite the contrary was the truth. There did not appear to be any nondescripts; apparently in Australia they no use for them; a man is right on the line and a decent chap or something to be avoided."

The very personal method adopted by Lieutenant-Colonel Lord in his narrative is one which demands some special quality to avoid a flavour of egoism. This is supplied by the evident enthusiasm for his unit and his interest in its varied activities and usefulness, which are interestingly and adequately described and are also illustrated pictorially.

Not only for the kind yet discriminating mention of Australians and for the skilled care given to the members of the Australian Imperial Force who were sent there for treatment, but for its considerable intrinsic interest, the book merits a cordial antipodean welcome.

The Medical Journal of Australia

SATURDAY, FEBRUARY 3, 1923.

A Retrospect.

Pædiatrics.

WHILE little important original work in connexion with diseases of children has been published in Australia during the year 1922, there are many indications of activity among those who devote their energies to this branch of medicine. Early in the year a new section, the Section of Pædiatrics, was formed within the New South Wales Branch of the British Medical Association. S. O. Cowen has contributed an important article on familial hæmolytic splenomegaly to the Victorian Branch, in the course of which he adduced evidence to show that this disease is dependent on a corpuscular dyscrasia and on an abnormal specific activity of the spleen. Some interesting and instructive discussions on clinical subjects have taken place at the meetings of the Branches of the British Medical Association and of the Melbourne Pædiatric Society.

The attitude of the medical profession toward nutritional diseases and disorders has been undergoing a change in recent years. William Weston has explained the relationship from the point of view of ætiology, symptomatology and treatment between athrepsia, acrodynia, pellagra, beri-beri, scurvy and rickets. There is little doubt that they are caused by some food deficiency. Difference of opinion still exists as to whether the deficiency of an accessory food factor is the sole ætiological factor in rickets. The part played by mineral salts is an important one. It has been ascertained that all animals must receive accessory food factors in order to maintain life. The animal possesses no power of elaborating these substances. The food of cows deficient in vitamins results in milk correspondingly deficient. A. F. Hess and others have demonstrated the fact that the fat in human and cows' milk does not contain vitamins, unless the diet includes an adequate supply.

A. E. Vipond has summarized the literature on acrodynia. The name is derived from the Greek; *ἄκρον* means extremity and *ὀδύνη* means pain. The name, however, explains little, because the symptoms are many and varied, though to a large extent of a vasomotor type. Well recognized almost a century ago, it lapsed into obscurity until recently and now it occupies a prominent place in medical interest. Nasal catarrh, general enlargement of all the lymphatic glands of the body and a bluish-red, œdematous condition of the skin of the child's extremities are the characteristic signs. It is a vasomotor neurosis of obscure origin.

Wilbur C. Davison has discussed the failure of yeast therapy in the feeding of infants. It was assumed that because certain results were obtained experimentally in animals, corresponding benefits would accrue to babies suffering from digestive and nutritional disorders. The general consensus of opinion in this regard is that yeast administration is of little or no value and in certain circumstances it may be actually harmful. The commercial exploitation of yeast in infant dietetics resulted in one of the year's fads in America.

The subject of rickets referred to above has attracted many workers and the literature has increased largely as a result. One of the latest contributions to the subject is a report by H. Corry Mann, published under the auspices of the Medical Research Council. He has carried out an exhaustive study of the conditions under which rickets occurs in London and has come to the conclusion that the disease will become relatively uncommon in the course of ten years as the activities of the welfare centres extend. He correlates rickets with poverty and with deficient fat associated with carbo-hydrate excess. Other ætiological factors are recognized. A *résumé* of this report appears elsewhere in this issue. A. F. Hess has discussed the significance of the clinical, radiographic and chemical changes in the early diagnosis of rickets. He has pointed out that only a short time ago the condition seemed easy to diagnose, whereas now it is difficult. Estimation of the inorganic phosphates in the blood as suggested by Howland and Kramer has been helpful. The clinical signs are variable, with the exception of beading of the ribs. Skiagraphy has

proved disappointing, since the changes in the epiphyses take place late in the disease. The normal inorganic phosphate content of the blood varies according to Dorsy and Tell from 4 to 4.5 milligrammes per 100 cubic centimetres. When the phosphate content is below 3.75 milligrammes, the diagnosis of rickets is said to be justified. With improvement of the condition the phosphate content increased very rapidly. In addition to the exhibition of cod liver oil and the application of ultra-violet rays, the carbon arc light has been found to be efficacious in the treatment. K. Huldschinsky has shown conclusively that when children suffering from rickets are exposed on repeated occasions to the rays of the mercury vapour quartz lamp, the healing of the rhachitic process ensues and the changes in the phosphate content of the blood disappear in the same manner as when treatment with cod liver oil is employed. The cadmium spark and the ferri-chromium condenser spark are said to act as well as the quartz lamp.

Considerable attention has been directed to oral disorders in children. The responsibility rests with the medical practitioner rather than with the dentist. The wide-spread interest aroused by statistics indicating the number of children affected with dental caries makes it essential for the pædiatrician to become better acquainted with the child's mouth in health and disease. Conditions existing from birth to the sixth year determine the future state of the organs of mastication. The first years are the critical ones as far as the structure of the permanent teeth is concerned. The teeth and jaws are made to perform their functions through mastication. Soft, mushy foods fail to produce exercise for the jaws and to stimulate the gums. Food that requires mastication, causes friction of the gums and produces a hard, healthy condition of the muscles, bone and dentine.

The subject of tonsillectomy has been warmly debated in Australia and elsewhere. Henry Heiman raises the question of its indications for infants and children. Many writers have maintained that the tonsils are the portals of entry and foci of the infective agent of almost every pathological process. This has become almost an obsession with many practitioners and with the laity. Tonsillectomy must be regarded as a major operation whose risks and complications are serious. The indiscriminate removal of tonsils should be condemned. The tonsils have functions to perform. They act as filters, the first line of defence against microbic invasion. The lymphoid tissue cells are to a limited extent phagocytic, but, in addition, poly-morpho-nuclear leucocytes in considerable numbers make their way from the blood vessels to the surface through the epithelial covering. The tonsils play an important part in the lubrication of food as well as of the throat in speaking and singing. Kenyon and Kradwell maintain that after tonsillectomy the *palato-glossus* and *palato-pharyngeus* muscles are not wholly normal in their action. The surgeon should be guided by safe and conservative principles when determining whether this operation is to be performed. Tonsillectomy is indicated when repeated attacks of tonsillitis have produced a condition of true obstruction or of irregularity, raggedness and friability. Similarly recurrent accumulation of cheesy material in the crypts, which may be extruded on pressure, is a sign of tonsillar disease. Cooperation is necessary to banish the desire to remove every tonsil and to establish safe, conservative and rational principles.

Dermatology.

A considerable amount of interesting work has been carried out in connexion with the diseases of the skin and their relation to the other organs and tissues of the body, but very little that is new has been disclosed thereby. In Australia the year 1922 has apparently been a quiet one for the dermatologists. In October, 1921, a Dermatological Section of the Victorian Branch of the British Medical Association was formed, but no records are available of the work of this body. Dr. Grant Lindeman has published in this journal an interesting account of a condition known under the name of *keratodermia blenorrhagica*. In this affection a generalized eruption characterized by efflorescences covered by crusts of a waxy appearance, is associated with a gonorrhœal infection. The crusts are shed and the denuded areas appear reddened, moist and shiny, but not ulcerated. Microscopical examination reveals a hyperkeratosis.

Yeast infections of the skin have been the subject of study in various parts of the world within recent

times. It is both important and pertinent to refer in this place to the articles published by J. R. Williams and Charles Badham on a form of blastomycotic meningitis which has been observed in Australia. In Williams's patient there was a definite rash, but there does not appear to have been a localized infection of the skin. Badham is inclined to identify the yeast producing the meningitis as *Saccharymyces tumefaciens,* although he had not completed his investigations at the time of publication. S. S. Greenbaum and J. V. K. Lauder point out that *Oidium albicans* attacks the skin and produces a rash macroscopically indistinguishable from ringworm.

The tricophyton infections of the skin have also attracted attention. E. Bruusgaard has found that in *kerio Celsi* or *tricophyton profunda* there is an inflammatory reaction associated with an acute exanthem, the result of a hæmatogenous infection.

Some important histological work has been carried out by A. Kissmeyer and A. With in regard to the changes in the elastic tissue of the skin in the dermatoses. Degeneration of elastic tissue takes place in scars, transplants, granulation tissue, *pseudo-xanthoma elasticum* and in various affections associated with a yellow discoloration of the skin.

Douglas Montgomery has endeavoured to secure further evidence in support of his hypothesis that *herpes zoster* is an infective process. He holds that it is conveyed from patient to patient and that an attack confers immunity against subsequent infections. His arguments are ingenions, but the evidence is insufficient to warrant acceptance.

The therapeutic aspect of dermatology is always a fertile field for the publicist. Too much attention should not be given to the claims made on behalf of new remedies and revivals of forgotten drugs. Very few methods of treatment are curative in the strict sense of the term. Nature usually lends a helping hand and the lastest drug gains the credit. C. Levaditi has been busy in resurrecting the use of bismuth salts for the treatment of syphilis. Other dermatologists, especially in France, confirm Levaditi's statements concerning the powerful curative action of bismuth and even maintain that it ranks among the most powerful anti-syphilitic remedies. It remains to be seen whether or not mercury and the arseno-benzol drugs are to be replaced by tartro-bismuthate of potash and soda.

An attempt is being made to extend the use of the so-called non-specific protein therapy to skin affections. Nothing new has been added to the knowledge possessed concerning the mode of action of foreign proteins by observations of their effects in skin lesions.

Oto-Rhino-Laryngology.

The most important event in the world of laryngology and its allied subjects during the year 1922 was the Tenth Session of the International Otological Congress. This meeting was held in Paris in July. Among the subjects of discussion were abscess of the cerebellum, otitic meningitis, the value of functional tests of the vestibular apparatus and syphilis of the ear. A discussion took place on the treatment of cancer of the larynx by operation, by X-rays and by radium.

J. S. Fraser has published a comprehensive review of the work undertaken in connexion with deaf-mutism in its clinical and pathological aspects. He considers that Hammerschlag's classification is the best. Many authorities have focussed their attention on the changes in the labyrinth, but deafness resulting from brain lesions appears to have been but imperfectly investigated.

Logan Turner has published the results of a skiagraphic investigation by himself and the late W. G. Porter into the structural type of the mastoid process of one thousand crania of various races of mankind. Albert A. Gray has traced the course and relations of the auricular branch of the vagus (Arnold's nerve) in a series of temporal bones and has arrived at the conclusion that they differ considerably from those described in standard anatomical works; the latter are probably inadequate and incorrect. Valuable work has been carried out by George Wilkinson, of Sheffield, on the mechanism of the cochlea and on the analysis of sound by resonance. He has shown that the tensile strain on the various sectors of the basilar membrane can be approximately calculated. He has also prepared a model illustrating the presumed resonance mechanism of the cochlea with special reference to the inertia of the contained fluids. From his researches he contends that the fibres of the basilar membrane

are differentiated progressively for length, tension and mass, that their vibrational frequencies range continuously over a considerable area, that this differentiation can only be explained by crediting the basilar membrane with the function of analysing sound by sympathetic resonance, that a membrane differentiated in this manner cannot be made to functionate in any other manner, that the analysis as effected by the basilar membrane is imperfect and finally that the measurements of small intervals of time, such as periodicities of sound waves, can only be made by mechanical means. In regard to the question of analysis, Wilkinson has shown that corrections within the central nervous system have to be applied. Analogies exist for the sense of touch and sight. Central analysis of sound is inconceivable.

At the University of Utrecht important researches have been conducted in connexion with the differentiation of function of the sacculus, utriculus and semicircular canals. Passive movements of an animal's body in different directions in space elicit muscular contractions and relaxations which are known as "progressive movement" reflexes. These reflexes do not occur after labyrinthectomy and have been shown to arise from the functioning of the semicircular canals. The "neck" reflexes consist in certain extensions and flexions of the body musculature when the head is moved about in various directions in relation to the fixed body and in movements of the eyeballs when the body is moved about while the head is fixed. These reflexes occur after ablation of the whole cranial contents as far as the first, second and third posterior cervical nerves in the first and in the second as long as the *motor oculi* nuclei and the corresponding nerves, their downward connexion with the spinal cord and the upper three cervical nerves are intact. The "otolithic" reflexes are utricular and saccular. In the former when an animal, taken from its normal attitude of rest in which the limbs are flexed, is laid on its back with its head at an angle of 45° to its body, the limbs become extended and rigid. In the latter the head position is controlled; the animal attempts to bring its head into the "normal" position, no matter how the body is disposed. It also controls the compensatory eye movements. The eyes move in certain definite ways with varying position of the body, if care be taken to eliminate the neck reflexes. These reflexes persist after decerebration and removal of the brain as far as the level of the entrance of the eighth nerves, as long as the *motor oculi* nuclei are preserved. They disappear after section of the eighth nerve, after labyrinthectomy and after "effective centrifugalization." These results were found to have a clinical application in patients with cerebral lesions corresponding more or less to "decerebration." The patients exhibited "neck" reflexes and some of them manifested certain of the "otolithic" reflexes. It is to Professor Winkler, of the Neurological Clinic at Utrecht, that much of the credit of inaugurating these studies is due. It was he who conceived the idea of employing centrifugal force to detach the otoliths from the utricle or saccule without interfering with the canals or tympanic structures.

Hoshino has conducted some experiments in connexion with Bárány's hypothesis of the localization of the arm and leg areas in the cerebellar cortex. He has shown that the cerebellar hemispheres constitute only subsidiary centres. As long as the cortex of the central lobe of the cerebellum is preserved, it does not matter whether a cerebellar hemisphere is present or not.

In connexion with middle ear disease it has been shown that ionization is effective only in cases of purely tympanic sepsis. This form of medication is useless in the presence of caries of bone, granulations or polypi. Attention has been drawn to the comparative frequency of abscesses in the temporal region caused by zygomatic mastoiditis. At times the origin of these abscesses is overlooked. There is usually otorrhœa and always some degree of deafness. In cavernous sinus thrombosis repeated bleedings from the sigmoid sinus have been recommended in order to aspirate the clot from the petrosal sinuses. In suppurative meningitis irrigation of the sub-arachnoid spaces is recommended immediately micro-organisms are found in the cerebro-spinal fluid.

The opening and drainage of the mastoid antrum in the early stages of middle ear suppuration, if paracentesis and meatal antisepsis do not check the discharge at once, have been advocated by eminent otologists.

Irwin Moore has investigated the condition of prolapse of the laryngeal ventricle and eversion of the saccule. He attributes the former condition to hypertrophy or œdema of the folds of mucous membrane lining the walls of the ventricle. The saccule may be inflated to form a laryngocele and may become herniated toward the airway or it may be everted by the negative pressure induced by coughing.

The diathermic cautery is being employed for the removal of malignant growths of the mouth and pharynx in preference to the knife by many surgeons. In this way many malignant processes, previously inoperable, are rendered operable. The removal of the glands in the triangles of the necks is urged either before or after the operation.

Urology.

As in previous years a great deal of attention has been devoted by urologists to the affections of the prostate and their treatment. In Australia S. Harry Harris has recorded a very considerable advance in the operation of prostatectomy performed on a large number of patients. The employment of glass drainage tubes and the adoption of other modifications of the usual technique, added to individual care and preparation of the patient, appear to yield admirable results. In America F. Hinman has introduced a modification of Young's perineal prostatectomy. This consists in the reflection of a V-shaped flap containing the ejaculatory ducts and the enucleation of the adenomatous mass above and in front of the flap. J. T. Geraghty has also modified this operation by the passing of a long, curved prostatic tractor through the urethra.

The problem of carcinoma of the prostate still presents great difficulties. In France and the United States of America radium is being employed alone or together with surgical means. It is stated that better results are obtained by frequent applications with short periods of irradiation than by large doses. More promising results have been obtained in cancer of the bladder.

L. R. Sante has evolved a special technique of using injections of air into the peritoneal cavity for the purpose of distinguishing retro-peritoneal growths situated within the peritoneal cavity. Skiagrams are taken of the retro-pertioneal regions. Although this author claims that the method is devoid of danger, M. J. Case has reported five deaths and many complications in a series of two thousand inflations of the peritoneum with air. S. A. Thompson has recently revived L. Cole's method of pneumopyelography or injection of warmed air or oxygen under manometric control into the renal pelvis. Carelli has described a new method of skiagraphy of the kidney. He insufflates the perirenal fatty space with oxygen or carbon dioxide. He claims that, when properly carried out, this method discloses the kidney as an island in a lake of air. In addition, the outline of the suprarenal gland is seen. The objection to this method has been raised that, if the perirenal fat is missed, the gas may be injected into the psoas muscle, into the peritoneal cavity or under one of the crura of the diaphragm. From the last named situation the gas may spread under the pericardium and through the anterior mediastinum to the cellular planes of the neck. When this has occurred, however, no harm has resulted.

Marion has advocated the extension of the ordinary pyelotomy incision across the renal parenchyma for the removal of renal calculi of moderate size. The large retro-pelvic artery is first ligatured and divided. Marion claims that this procedure is followed by a lessened liability to secondary hæmorrhage and by less extensive destruction of renal tissue than the usual nephro-lithotomy.

Some interesting experimental work has been conducted by Quinby, André and Grandineau in connexion with the reflux of fluids up the ureter from the bladder. Reflux is said to occur when the ureter is dilated and rigid. When the ureter is healthy, two conditions must be present before reflux takes place. These are that the tonus of the vesical wall is raised to a certain degree and that there is a sudden elevation of the intra-vesical pressure.

J. R. Caulk has recorded a form of contracture of the neck of the bladder in the female. This trouble is well recognized in the male, but it has hitherto been overlooked in the female. The symptoms are similar to those of prostatism in the male. It is dependent on an inflammatory infiltration implicating the submucous glands and the neighbouring internal sphincter. The condition demands operative treatment.

Abstracts from Current Medical Literature.

ORTHOPÆDIC SURGERY.

Idiopathic Structural Scoliosis.

ARMITAGE WHITMAN (*New York State Journal of Medicine*, October, 1922) discusses the subject of the corrective and operative treatment of idiopathic structural scoliosis. He excludes from consideration all forms of secondary scoliosis, as well as postural deformity (that type which may be corrected by a change of attitude) and confines his attention to a type of unknown origin. In this type of the condition the deformity cannot be corrected by a change of attitude and it has generally been present sufficiently long to occasion a structural alteration in the vertebra or vertebræ. The patient is usually a girl, between the ages of twelve and sixteen. The deformity has generally been discovered by a dressmaker, who has found one hip or one shoulder unusually prominent. Some 12% of all school children suffer from structural scoliosis. In many instances the condition is not progressive. A small proportion of patients, however, become gradually worse, the deformity becomes exaggerated and its secondary effects may be so severe that derangements of the internal organs take place. The author suggests that a skiagram, together with a tracing of the spine, should be taken of all patients who are on the border line. Treatment can be divided into three classes, according to the severity of the condition. Thus the institution of exercises is sufficient to correct the deformity in some instances. In others exercises, together with the wearing of a support, are necessary, while in a third group recourse must be had to corrective measures. The author has found that the majority of patients improved up to a certain point while wearing a corrective jacket. Improvement beyond this would necessitate treatment for a period of years. In an endeavour to shorten this period he has recently used the fusion operatio of the spine as practised by Hibbs and Forbes. After the performance of the operation the patient is kept in a frame for two months. Wearing of a short plaster jacket is then replaced by wearing a corset and the institution of suitable exercises. Since July, 1920, the author has operated on fifteen patients. At the time of reporting, eleven of these patients had been without support for periods varying from four months to seventeen months. The condition in all was satisfactory. No deaths and no infection of wounds occurred. In dealing with patients in the active period of growth operation should be postponed as long as possible.

Congenital Dislocation of the Hip.

J. E. GOLDTHWAIT, Z. B. ADAMS AND DE F. P. WILLARD (*Journal of Bone and Joint Surgery*, October, 1922) present a report upon the best method of treatment for congenital dislocation of the hip. The feature that attracted most attention in the investigation was the large number of patients in whom the head of the femur was either destroyed or very much misshapen when the earlier pictures had shown little, if any, malformation. The authors conclude that this was due to the violence used in the manipulation and this view is strengthened by the fact that the malformation was more noticeable in patients in whom the manipulative method had involved much force than in those in whom it had been less violent. The methods which seem to meet the requirements in the most satisfactory manner and from which the best results are to be expected, are those described and used by Ridton and the method practised by Professor Denucé, of Bordeaux. Of the machine manipulations, the least objectionable is the appliance used by Hibbs.

Z. B. ADAMS (*Journal of Bone and Joint Surgery*, July, 1922) visited Professor Denucé at Bordeaux and gives an account of the treatment of congenital dislocation of the hip as practised by him. As a preliminary to reduction of the dislocation Professor Denucé stretches the adductor muscles. This stretching is done by gentle stroking of the muscles with the palm of the operator's hand. Great stress is laid upon the point that no violence or force is to be used. The thigh is then brought to right-angle flexion and full abduction. If the thigh then lies upon the table at right angles to the trunk, an attempt at reduction is made. In doing this the thigh is flexed on to the anterior abdominal wall with the knee pointing to the opposite axilla. Slight pressure is then made in the longitudinal axis of the thigh, while the fingers of the operator's other hand are placed round the head of the femur, lifting up and pressing the muscles in between the head and side of the pelvis. Circumduction is then begun. The knee is carried to its own side of the trunk and then slowly to the abducted position. The fingers behind the head continue to lift during this movement and the head slowly comes forward and lodges in the acetabulum. Should the hip be very unstable, plaster is applied with the thigh in 90° abduction and 110° flexion. Ordinarily patients are treated with the thigh in complete abduction at 90° flexion. The plaster of Paris extends from the nipple to the ankle. Should the attempt at reduction be a failure, extension is applied to the limb for three weeks and a second attempt then made. The child is allowed to go home immediately after the operation and is not seen for three months. The parents are instructed to keep the child on a firmly padded flat table and not in a bed. At the end of three months the plaster is removed from the leg and lower end of the thigh if the head is felt being pushed forward into the groin. At six months the anterior half of the plaster is cut away and the child is bandaged to the posterior half. Active movements are then begun. No passive movements are allowed, but heating with hot sand and heliotherapy are also used as treatment. After three or four weeks the child is put into strong salt baths. The water is so buoyant that the child will not sink and is able to exercise his lower limbs while supported by the water. No weight bearing is permitted until the centre of ossification of the upper epiphysis of the femur is seen to have increased in size. Exercises, local heat and baths are continued for many months after walking is begun.

Pott's Disease.

R. P. SCHWARTZ (*Journal of Joint and Bone Surgery*, October, 1922) describes a new plaster shell for the treatment of Pott's disease in children. It has been the custom at the Children's Hospital, Boston, to treat spinal caries by means of a plaster shell divided transversely at about the position of the kyphos. The two halves were hinged and were used as levers to bring about a correction of the deformity. The lower section was fixed, but the upper section was raised or lowered by means of turn-buckles. X-ray examination showed that the fulcrum should not be placed opposite the apex of the kyphos, except in the region of the seventh thoracic vertebra. In lesions above the seventh thoracic vertebra the fulcrum should be below the apex of the kyphos, 0.6 centimetre for each vertebra above the level. Below the eighth thoracic vertebra the fulcrum should be above the apex of the kyphos, approximately 0.6 centimetre for each vertebra below this level. To overcome the defects in the divided shell the author has devised a plaster apparatus which is not divided transversely. It is made to support the patient from the top of the head to the ankles. In the region of the kyphos lateral windows are cut in the plaster to facilitate X-ray examination. The whole shell is mounted on a wooden base by two iron supports. An important innovation is an adjustable fulcrum constructed of aluminium and supported by two bolts which traverse the plaster and an iron support which is mounted to the base under the shell at the level of the kyphos. By means of this fulcrum correction of the deformity can be obtained without the danger of separation of the diseased vertebra.

Speech Development.

C. G. STIVERS (*California State Journal of Medicine*, December, 1922) states that a recent study of the voice and speech among the crippled children admitted to the Orthopædic Hospital School of Los Angeles in the four years from 1918 to 1921 inclusive revealed some speech defect in nearly 10%. Defective speceh development or production is found most commonly in patients suffering from spastic paralysis, incoordination ataxias, cerebro-spinal inflammation and in mental defectives. Speech is motorized thought and gesture is the primitive form of speech. The crippled child probably cannot lay the foundation for gestures or spoken word or written

speech. Treatment for defective speech should be carried out simultaneously with the treatment of other defects. Breathing exercises, vowel sounds, counting and one syllable words, with games, simple, bright-coloured objects, pictures, together with arm movements, are used. When the condition is associated with incoordination, listening to music, beating time, reciting rhymes and games are used.

PÆDIATRICS.

Post-Encephalitis Behaviour Disorders.

LESLIE B. HOHMAN (*Bulletin of the Johns Hopkins Hospital*, October, 1922) has made a study of eleven children who were brought for treatment because of profound changes in character and behaviour. In every instance the change had been so sudden and so complete that it seemed as if a specific ætiological agent was at work. In every instance this change had followed an attack of epidemic encephalitis. The author lays stress on the fact that the condition is apparently not uncommon and points out that sick children are very apt to be classed merely as bad children and treated accordingly. He has, moreover, observed certain reactions which are usually classified as purely functional or psycho-biological in nature, but which in his opinion are closely related to organic changes. The author does not think that the constitutional factor is of great importance in these children. Unlike Franchioni, who found a neuropathic background in all the children studied by him, the author found that only two among eleven children had shown any abnormality before the development of the infection. The most striking changes were in the character and behaviour of the children. They became irritable, quick tempered, boisterous, quarrelsome and sometimes showed streaks of brutality. Their behaviour towards school teachers and parents underwent complete change. They became destructive of property and careless of their personal appearance. In some instances exhibition tendencies and extraordinary sexual precocity were present. In many instances inability to sleep occurred. Unlike Rütimeyer, the author found that psycho-therapy was useless in the treatment of this condition. Over-talkativeness and spasmodic movements were a common feature. In dealing with these children the author has been unable to find anything that is of permanent value as a therapeutic agent. Time appears to be the sole healing factor. Punishment does not assist in any way, but the author thinks that a moderately rigorous *régime* should be instituted.

Congenital Osteo-Sclerosis.

RALPH K. GHORMLEY (*Bulletin of the John Hopkins Hospital*, December, 1922) reports an instance of congenital osteo-sclerosis occurring in a male child, aged eight years. The child complained of a pain in the left hip and limped when walking. There was no family history of syphilis. The child had been born prematurely after a period of eight months' gestation and weighed 1.8 kilograms (four pounds) at birth. For some two years previous to admission to hospital the child had complained of "growing pains" in the back. Two months before admission the pain had become localized to the left hip and had been more noticeable at night time. He had begun to limp. On examination he was seen to be well developed and well nourished. He was bright and active. Examination of the spine showed slight deviation to the right, compensatory for slight tilting of the pelvis to the left. No tenderness was present. Slight atrophy of the left thigh and calf was noticeable. There was 0.5 centimetre of apparent shortening of the left lower extremity. Voluntary and passive movement in the direction both of abduction and hyper-extension of the left thigh were somewhat restricted. Examination of the blood showed the presence of slight anisocytosis and poikilocytosis. The blood serum failed to react to the Wassermann test. The blood phosphorus was estimated at 4.8 milligrammes per hundred cubic centimetres. The blood calcium content was 10.2 milligrammes. The urine was normal. The basal metabolism was above the average for the age and sex. While in hospital the patient had a daily rise of temperature to 37.8° C. (100° F.). Nothing could be found to account for this fever. Examination by X-rays showed a curious dense appearance of the bones of the pelvis. The same condition was found in all the bones of the skeleton. The cortex of the ribs was thickened, the marrow cavity in places apparently being obliterated. The cortex of all the long bones was thickened. This was most noticeable in the femora and humeri. Skiagrams of the bones of both parents were taken. The same condition existed in the father as in the child. Review of the father's family history failed to reveal anything abnormal. His blood did not react to the Wassermann test. The author states that he has failed to find records of a similar condition in a living person. He records several instances described at autopsy by various authors as osteosclerosis. Heuck found thickening of the diaphyses of the femora and humeri, as well as of the vertebræ and skull, in autopsies on two men dead of leuchæmia. He held that the bony lesions produced changes in the blood by interference with the bone marrow. The majority of authors have taken the view that the sclerosis is secondary to an irritation which accompanies the morbid process in the blood. The author concludes that the instance reported by him is a definitely inherited condition and not related to any demonstrable metabolic disturbance, although some increase in blood phosphorus was present.

Ætiology and Pathology of Chorea Minor.

LOUIS C. SCHROEDER (*The Journal of the American Medical Association*, July, 1922) describes the advance made in the pathology of *chorea minor* by Aschoff's discovery of the so-called submiliary nodules of rheumatic fever. These are focal lesions, most frequently found in the walls of the left ventricle and characterized by fan-shaped collections of giant cells. It has long been recognized that chorea and rheumatic fever are allied; later, tonsillitis was definitely linked with rheumatic fever. These observations, however, do not explain those intances of chorea in which no signs of rheumatism are present. The most recent advances in the knowledge of the pathology of chorea are undoubtedly due to the impetus given by a more correct understanding of the physiology of the basal ganglions. Lesions of this area may certainly cause involuntary movements of the skeletal muscles. Organic lesions resembling those of *encephalitis lethargica* have been found in patients suffering from chorea in the *corpus striatum*, thalamus and red nucleus. Cobb raises an objection to the organic theory. He states that there can be no doubt of the possibility of chorea following fright or sudden emotion, but he asks the question whether or not an organic lesion previously without overt symptoms, is suddenly able to be activated by an emotional shock.

Infantile Rickets.

ALFRED F. HESS AND LESTER J. UNGER (*American Journal of Diseases of Children*, October, 1922) endeavour to determine the incidence of rickets among artificially fed children, which in large cities has been estimated at from 50% to 70%. With a broader conception of rickets, diagnosis has become increasingly difficult. Of the immediate clinical signs the most reliable is beading of the ribs, to which more attention should be paid. The great disadvantage of this sign is that it does not aid in differentiating between the active and the inactive phases of the disorder. X-ray examination of the epiphyses has proved disappointing. It frequently fails to demonstrate lesions at a time when the diagnosis can be established definitely by other methods. A failure to find osseous changes by radiography has, therefore, little value in deciding the question of early rickets. It is a most valuable sign, however, in judging whether recovery is taking place or whether a therapeutic agent is of value. The inorganic phosphate content of the blood is generally diminished in rickets in the early stages, long before the X-ray examination gives evidence of the disorder and frequently as early as or earlier than beading of the ribs. It is not, however, pathognomonic, as other factors may lead to this diminution. A group of well-nourished breast-fed infants, examined clinically and by radiography, showed rickets in more than 50%. Rickets is more prevalent in winter. If its incidence is studied when it is at its flood and use is made not only of the ordinary clinical signs, but also of the newer methods, it will be found that almost all bottle-fed infants give some indication of rickets.

Special Abstract.

THE CAUSATION OF RICKETS.

In the year 1906 Dr. H. Corry Mann attempted to prevent the onset of rickets by adopting a routine method of feeding infants. For eight years he kept detailed records of the infants under his care and of the other members of their families. The method of feeding was with undiluted citrated milk. The Medical Research Committee requested him in 1915, when the subject of the significance of environment and diet on the production of rickets was being investigated, to continue his observations and to report at a later date. The work was interrupted by the war, but was subsequently resumed. The Medical Research Council now publishes without any official introduction or other comment a report covering ninety-nine pages.[1] The report is rendered difficult to read on account of the lack of ability on the part of the author to express his meaning easily and well and also on account of the tedious overloading of detail. It is obvious that the author has little understanding of bio-chemical processes and his frank contempt for the modern work on the physiological effect of the accessory food factors will be regarded as surprising by many. As will be noted, he relies entirely on impressions in judging such important matters as the suitabilty of mother's milk for the infant, for he ignores all evidence of the quantity or quality of the mammary secretion and is content to accept the statement of the mother or the fact that the baby does not gain in weight as proof of unsuitability. He has ascertained an association of rickets with certain common defects in dietary among the families of casual labourers in the south of London without ascertaining whether these defects are not themselves associated with bio-chemical injuries of fundamental importance. It should further be pointed out that, while the author recognizes the importance of a sufficient caloric intake for babies as well as for adults, it does not seem to have occurred to him that the elements required for the supply of calories to cover the metabolic changes in the child's organism and to provide for growth must be adjusted to external as well as internal influences. Of the former, perhaps the most important is climate. Excess of fat given in a hot climate or in a hot environment invariably leads to a reactive revolt and a failure of the digestive organs to convert the fat into heat.

The investigation was undertaken within a large district to the south of the Thames. The majority of the children attended as out-patients at the Evelina Hospital or at Guy's Hospital. Rickets was diagnosed clinically and by means of the skiagraphic appearances of the bones. The author distinguishes severe forms with deformity and definite enlargement of the epiphyses, slight forms with prominence of the epiphyses, pre-rhachitic conditions in which there are signs of delayed closure of the anterior fontanelle, delayed dentition and skiagraphic evidence of rickets and delayed ossification without other evidence of rickets. In the course of his studies he ascertained the details of the home and its environment and kept records of the presence or absence of clinical evidence of rickets in other members of the family.

Social Condition.

The majority of the families of which his patients were members, were waterside or casual labourers. During the winter months unemployment is frequent. During unemployment the head of the family derives means of subsistence by using his savings, by pawning articles of furniture or clothing, by loans, by utilizing the labour of his wife, by relief from "loan clubs," the poor law authorities or unemployment insurance pay and, lastly, by obtaining fresh or dried milk at half cost or gratuitously from infant welfare centres. Wages tended to rise between April, 1919, and April, 1920, but fell in the following twelve months. A statistical inquiry was made to ascertain whether there was any correlation between the income, calculated per individual, and the incidence of rickets. He was able to obtain reliable information concerning three hundred and twenty-four children suffering from rickets and two hundred and seventy-three children in whom rickets was excluded. The latter group included one hundred and forty-four non-rhachitic children in whose home no rhachitic children were found. Notwithstanding the fact that during the early post-war period food values varied widely, Dr. Mann considers that when the mother is given forty shillings to pay rent, coal, gas, club contributions, insurance premiums and food for her husband, herself and her four children, she has great difficulty in meeting her expenses. This is equivalent to six shillings and eight pence per head. The income of the families of thirty-eight of the three hundred and twenty-four rhachitic children worked out at less than six shillings a week, while that of thirteen out of one hundred and fifty-five non-rhachitic control children also worked out at this level. It is pointed out that the thirteen children were attending infant welfare centres and were consequently receiving assistance in the form of milk. From the tables, but not from the text it appears that the income per head worked out at six shillings or less in the families of sixty rhachitic and forty-nine non-rhachitic control children.

In reviewing the question of rent, Dr. Mann states that the weekly rent of a two-story house of nine rooms and two sculleries, occupied by three families comprising seventeen persons in all, was 6s. 6d. a week in 1891, 7s. 6d. in 1919, 11s. 4d. at Christmas, 1920, and 11s. 10d. in July, 1921. He deals in some detail with the type of house in which the children live. He maintains that the house shortage produces an economic disability to the labourer; he is unable to live near his work and to move to a new district when his work is transferred to that district. He finds that children of both sexes above the age of puberty have to sleep in the same room. Young married couples, unable to find accommodation, are compelled to remain in the houses of their parents. The parlour or sitting room of pre-war days, has almost disappeared. This room is now occupied by a lodger. The result is an overcrowding of the other rooms with the furniture of the sitting room. The cubic air space of the rooms per person is slightly higher in the houses of the families with a child suffering from rickets than in those of the healthy families. The cubic air space of the sleeping apartment is practically the same for the two classes. The size of the family is the same in the two groups. Dr. Mann points out that the prevention of conception and the procuring of abortion are more frequently practised since than before the war. This change is attributed to the fact that the income of the parents is often insufficient to support an additional member of the family without exposing the existing children to the effect of underfeeding. The frequency of "married women's labour" is higher in the group of families with rhachitic children than in the control group. Dr. Mann finds no evidence that children with rickets are less in the open air than healthy children. He recognizes that absence of fresh air and sunshine lead to anæmia, but this was not very common among those examined. Moreover, the children use the streets as their playground and whole families seek the parks and open spaces during fine weather.

Healthy Children.

Having examined the social conditions and home environment of the two groups without discovering any factors existing with considerable frequency among the rhachitic which is absent among the non-rhachitic, Dr. Mann proceeds to discuss the individual child and its dietary. Reviewing the conditions generally, he comes to the conclusion that for all children of the families investigated the quality of the diet is bad and the fat-carbo-hydrate balance is wrong. He attributes this to insufficiency of money and not to ignorance or carelessness. He refuses Dr. Margaret Ferguson's method of classification according to the "family budget." Children exhibit individual likes and dislikes in regard to items of food and especially fats. He has therefore adopted the expedient of grouping the children into twelve main classes, namely, those fed on (*i.*) breast milk, (*ii.*) breast milk and fresh cows' milk,

[1] "Rickets: The Relative Importance of Environment and Diet as Factors of Causation: An Investigation in London," by H. Corry Mann, O.B.E., M.D.; Medical Research Council (Privy Council) Special Report Series, No. 68; 1922. Price: 2s. 6d..

(*iii.*) breast milk and dried milk, (*iv.*) fresh milk, (*v.*) dried milk, (*vi.*) dried milk and fresh cows' milk, (*vii.*) dried milk and infants' foods, (*viii.*) condensed sweetened milk, (*ix.*) breast milk and condensed sweetened milk, (*x.*) breast milk and infants' foods, (*xi.*) mixed diet and (*xii.*) "war diet." He finds that of the two hundred and forty-two healthy children, 77.8% were fed on one or other of the first seven dietaries and the remaining 21.6% received the diets (*viii.*), (*ix.*), (*x.*) or (*xi.*). It appears that 18.1% were fed exclusively on the breast. Breast milk, either alone or with fresh or dried milk, was given to 65.9% of the healthy children.

The non-rhachitic children were divided into three main groups, those who were regarded as healthy from the first and who were kept under observation up to eighteen months, those who were healthy, but in whose families one or more children were suffering from rickets and those who subsequently developed rickets. The first group includes one hundred and seventy-seven children who are regarded as controls, in view of the fact that the conditions of their homes were studied. Dr. Mann divides these children into classes according to the method of feeding and describes at some length the histories of typical instances of each. In this group there were thirty-five methods employed. It appears that, while the number of exclusively breast-fed babies is given in the table as forty-four, in the detailed list fifty-seven were given the breast for eight or nine months and forty other children were given the breast for twelve months. No information is given in regard to the frequency of the breast feeding or other details. It also appears that fifteen of the mothers of the two hundred and forty-two non-rhachitic babies were engaged in married women's labour.

Of the one hundred and eighty-six children without rickets, but belonging to families in which rickets had occurred, seventy-seven were breast-fed for short periods and then were given fresh milk, forty-seven were breast-fed for from nine to twelve months, twenty-four were breast-fed for short periods and then given "Glaxo" or "Ambrosia," while eighteen were breast-fed for short periods and subsequently were given sweetened condensed milk and later dripping, bacon fat and the like. Very few of these children received patent infants' foods. Dr. Mann states that these children, almost without exception, were under supervision at infant welfare centres or an out-patients department of a general hospital, where the diet was controlled.

The next group comprises children who developed rickets during the period of observation. There were only eight. He attributes this small incidence to the fact that the children were being fed either at the breast or on fresh cows' milk or on dried milk. Furthermore, he had at his disposal funds provided by the Medical Research Council for the purpose of providing the necessary diet for the baby in case of need in the period before this assistance was rendered by the welfare centre. In the third place, he finds that the care exercised at the welfare centres contributed to the prevention of rickets.

The Rhachitic Child.

A table is published dealing with the methods of feeding employed in the case of five hundred and thirty-three children with rickets. Exclusive breast feeding was adopted in 11%, while breast feeding either alone or supplemented by fresh or dried milk, fresh or dried milk feeding or a combination of the two and fresh milk given with patent foods were the methods adopted in 31.4%.

In examining the possible causes of rickets, he starts out with a distinction between dietetic factors and factors independent of diet. The first dietary defect mentioned is fat deficiency and carbo-hydrate excess. This was found to exist in 43.3% of the five hundred and thirty-three children. In the period from April, 1921, to October, 1921, the fat deficiency with carbo-hydrate excess was found to occupy the second place in frequency. Among fifty-five children it obtained nineteen times. During the whole period twenty-five children fed in this way with severe deformities were encountered. None of these children were breast-fed for long periods. Dr. Mann includes among this group, namely, fat deficiency and carbo-hydrate excess, feeding with sweetened condensed milk, with or without breast or cows' milk, presumably when the breast or cows' milk given was either in small quantity or continued for short periods. So-called war diets were also placed in this category. An endeavour is made to differentiate relative and actual carbo-hydrate excess. Relative excess was encountered when the money shortage was extreme. When more money was available, the excess became actual. The forms of sweetened condensed milk in use in the south London districts varied largely. The largest manufacturers admitted that the June batch was sold as quickly as possible, on account of the higher fat content of the milk of cows fed on grass. The keeping quality of the condensed milk is greater when the fat content is low. Full-cream condensed milk, being more expensive than skimmed condensed milk, is not used when money is short. A pre-war sample of this brand contained 11% of protein, 11% of fats and 55% of sugar, while a sample collected in June, 1921, contained 10.4% of fat, 8.93% of protein, 40.3% of cane sugar and 13% of lactose. While the different brands vary considerably in their composition, the poorness of the food is accentuated by the habit of the mothers when money is scarce of increasing the dilution.

Some information is given of the quantity of fresh milk given, but nothing is said of the quality of the cows' milk. It is notorious that milk varies in composition within very wide limits, even without the aid of the dairyman, that the fluid sold as fresh milk sometimes contains large quantities of pus, bacteria and other forms of dirt, that under certain circumstances the fat in milk undergoes dissociation and that it is misleading to endeavour to estimate the food value of milk from the quantity taken without regard to its composition and freshness. Twenty of the two hundred and thirty-one children received cows' milk either alone or associated with other forms of food. The author points out that the means of the parents precluded the free use of patent infants' foods which are expensive.

The second defect of diet is tabulated under the term "breast feeding" under two sub-headings—"poor breast milk" and "prolonged breast feeding." In regard to the "poor milk" he finds that this obtained in relation to thirty-seven infants. The mother was ill or was ill-nourished in the majority of instances. The criterion of the poorness of the milk was that the child did not thrive. Some of the mothers were receiving insufficient or unsuitable food, but little information is given in regard to these points. Prolonged breast feeding is entered against fifty-one infants. Seven children received the breast until the age of twenty-four months. In some instances this prolonged nursing was adopted to save the expense of bought food for the baby.

The third defect is labelled "finance" and it is explained that by this is meant unsuitable food resulting from money shortage in the home. In abject poverty there is starvation and this leads to arrest of growth and development and not to rickets. The author finds that rhachitic deformities occur with greater frequency when the money given by the wage-earner to his wife (in a family with four children) is about thirty-five shilling a week than when it is as low as twenty-five shillings. He enters eighty-six children under this heading. The fathers of thirty-eight of these children were out of work. The money devoted to diet, rent, coal, gas and contributions *et cetera* worked out at four shillings per head in five instances, at five shillings per head in fifteen, at six shillings per head in thirteen and at seven shillings per head in ten. When the average was not above 6s. 8d. per head the diet was poor. Dripping was absent, as were bacon fat, eggs, butter and milk. Margarine at times was bought in small quantities. Potato and bread formed the chief articles of diet. Dr. Mann found little evidence of a tendency to waste food. When the wages improved, the increased amount was spent on healthy food. Of the eighty-six children, fifteen had severe rhachitic deformities, sixty-one had slight deformities and ten presented pre-rhachitic early signs.

Carbo-hydrate excess as a cause of rickets is placed fourth on the list. The author finds that it obtained twenty-four times. Only one child had severe rickets. In many instances the children insist on taking too much sugar. Dr. Mann has no evidence of hyperglycæmia

and did not find sugar in the urine of any of these children.

The second group of possible causes embraces "diathesis," ante-natal influences, gastro-intestinal disorders, post-infective malnutrition and prematurity.

Dr. Mann claims that an inherited "diathesis" at times leads to the development of rickets, even when there is no gross defect in dietary. He produces thirty-nine instances. One or both of the parents of these children had rickets. He states that in adult life an inherited tendency to early and excessive precipitation of calcium salts about joints, in muscles and in the walls of arteries is generally recognized. It seems reasonable to him to assume that a tendency to delayed or deficient precipitation of insoluble from soluble calcium salts may also be an inherited defect. These children do not thrive from the first. In seven instances it is stated that the symptoms were congenital. The skiagraphic signs of rickets were detected at an early date. In addition to these thirty-nine children, in two of whom only rickets appeared in a severe form, there were thirty-six children classified in other groups with an inherited "diathesis."

Ante-natal influences were noted in twenty-two infants. Severe rickets was not present in any, while slight deformities were noted eleven times and early signs in eleven. The mildness of the manifestations is attributed to the fact that these children were supervised at welfare centres from any early period. The influences involved were infective disease in the mother during pregnancy, accidental complications during pregnancy, worry, money shortage, illness resulting from occupation during pregnancy and the use of abortefacients.

Gastro-intestinal disorders seem to have been present in seventeen children who developed rickets. The author failed to discover any association between chronic intestinal stasis and rickets, although as a former house surgeon to Sir Arbuthnot Lane this condition loomed largely in his vision. Summer diarrhœa is not frequently followed by rickets in London. Malnutrition and wasting as the result of gastro-intestinal affections seems to stand in some relationship to rickets in a few instances. Very little information was collected in regard to a possible association of malnutrition following infective processes and rickets. There were fourteen children in the group and only one of them had severe rhachitic deformities. Prematurity occurred three times in his series.

Delayed Ossification.

The author devotes a chapter to the subject of delayed ossification as distinct from rickets. This condition is manifested by delayed dentition, the postponement of the closure of the anterior fontanelle and the persistence of slender shafts of the long bone for a considerable period. There were eight children with this condition. In one the changes were severe and were indistinguishable from *osteogenesis imperfecta*.

Conclusions.

As a result of the investigations of the conditions under which rickets appears in the children of the waterside and casual labourers of south London, the author considers that he is able to determine the conditions which are associated with great frequency with rickets and to disclose those factors which have relation to the severe forms. He prefaces his conclusions by referring to the effect of the supervision of infants and children at the maternity and infant welfare centres on the prevention of the disease. During the period from 1910 to 1914 the incidence of rickets was diminishing. This was coincident with the establishment of the welfare centres and with the employment of the school nurse who brought her influence to bear on the general cleanliness and order of the home. The housing conditions remained practically unaltered during this period, but there was a distinct improvement in the general social condition of the people. In 1919 rickets appeared to have become more frequent. From April, 1919, to April, 1921, there has been a second reduction in the incidence of rickets. Severe deformities are now rare and are almost entirely confined to the districts where the poorest people live. He is of opinion that in ten years rickets will be relatively uncommon in London. Rickets occurs among the families of the casual labourers whose financial troubles are of primary importance.

Dr. Mann holds that rhachitic deformities occur as a result of an unbalanced diet characterized by a deficiency of fats and an excess of carbo-hydrates. It is severe and common where the people are compelled on account of want of money to purchase a cheap diet which can be stored without deterioration, so as to eliminate waste. The excess of carbo-hydrate in the form of sugar more frequently leads to severe rickets than an excess of starch. In some children the tolerance for fat is low during the early months of life. The use of sweetened condensed milk may be successful as a temporary expedient in these conditions, but the continuation of this diet is a frequent cause of severe rickets. Rickets occurring in exclusively breast-fed babies is usually attributable to the ill-health of the mother.

Some children are more liable to rhachitic changes than others. It is particularly necessary to avoid errors of diet for these children.

The author can find no evidence to support the contention that bad housing, overcrowding and deficient air space are responsible for the development of rickets.

British Medical Association News.

MEDICO-POLITICAL.

A MEETING OF THE WESTERN AUSTRALIAN BRANCH OF THE BRITISH MEDICAL ASSOCIATION was held on November 15, 1922, DR. D. D PATON, the President, in the chair.

Extension of the Printing Arrangements of the Australasian Medical Publishing Company, Limited.

THE PRESIDENT referred to a report issued by the Australasian Medical Publishing Company, Limited, for the extension of its printing arrangements. He explained many of the points.

DR. W. TRETHOWAN spoke in support of the proposal. THE MEDICAL JOURNAL OF AUSTRALIA was the organ of the Branches of the British Medical Association in Australia. It had hitherto steadily paid its way. It was now necessary to enlarge it to increase its usefulness. The other Branches had approved the proposals, with the reservation that the interest should be increased to 7% or 8%. If the members approved the scheme, they should be prepared to take up debentures. It was a business proposition with a special appeal to the members, as the journal was issued solely in their interests.

It was moved by DR. R. C. MERRYWEATHER and seconded by DR. E. A. OFFICER that the Branch support the larger scheme.

The motion was carried unanimously.

Hospitals Bill.

THE PRESIDENT briefly outlined the main points of a Bill that had recently been introduced to amend the existing *Hospitals Act*.

NOMINATIONS AND ELECTIONS.

THE undermentioned have been nominated for election as members of the New South Wales Branch of the British Medical Association:

OVEREND, BRUCE ROBSON, M.B., Mast. Surg., 1921 (Univ. Sydney), Trundle.

WALKER-SMITH, ANGUS BUCHANAN, M.B., Ch.M., 1922 (Univ. Sydney), 1, Tower Street, Manly.

Medical Societies.

MEDICAL DEFENCE ASSOCIATION OF SOUTH AUSTRALIA.

THE ANNUAL MEETING OF THE MEDICAL DEFENCE ASSOCIATION OF SOUTH AUSTRALIA was held in the Lister Hall, Hindmarsh Square, Adelaide, on December 14, 1922.

Election of Office-Bearers.

The following were elected office-bearers and members of the Council:

President: DR. H. SWIFT.
Honorary Auditor: DR. H. H. WIGG.
Honorary Treasurer: DR. W. J. GREGERSON.
Honorary Secretary: DR. J. W. BROWNE.
Members of Council: DR. DEAN DAWSON, DR. J. B. GUNSON, DR. A. F. STOKES, DR. R. J. VERCO.

Report of Council.

The following report for the year 1922 was presented by the Council:

REPORT OF COUNCIL, 1922.

Our President, DR. SWIFT, has been absent most of the year in England and his place has been occupied by DR. J. B. GUNSON as Deputy President.

Your Council is glad to report that members have not required assistance from the Association to any great extent during the past year.

In one case an action was instituted by a member against a local councillor for alleged slanderous statements by him in reference to the member's treatment of a case. The member was advised by the Association's solicitor and won his case, the defendant paying compensation to an agreed amount.

In another case an action for alleged slander was taken against a member by an unqualified chemist in his district. The member had told a patient that the chemist was unqualified and had warned the patient against having his prescriptions made up by this chemist. Judgement was given for the defendant with costs.

In both these cases the members interested have expressed their thanks to the Association for its encouragement and assistance.

In a third case a member was advised and guided by the Association's solicitor in a legal case in which his name had been mentioned, for which assistance he was grateful.

Our expenses this year have been decidedly less than in the previous year and our funds have satisfactorily increased.

We record with much regret the deaths of DR. SWEETAPPLE, DR. J. STEWART, DR. AITKEN, DR. FOOKS and DR. P. BOLLEN.

We regret that a number of the younger members of the South Australian Branch of the British Medical Association are not yet members of the Medical Defence Association and would like to draw their attention to the remarks of the Wood-Hill Committee in their final summing up of that case in *The British Medical Journal* of August 26. They say: "The moral to be drawn is that in no circumstances should a medical man engage in practice without being a member of one of the Defence Societies. Further, no medical man, after the warning which the profession has received by the case of Clayden *versus* Wood-Hill, need expect in any future similar case to be treated by his fellow practitioners with the generosity accorded to Dr. Wood-Hill."

J. W. BROWNE, Honorary Secretary.

Financial Statements.

The Honorary Treasurer presented a statement of receipts and payments for the year ended November 21, 1922, and a summary of balances on November 28, 1922. The receipts include subscriptions to the value of £58 1s. 3d. and interest aggregating £60 19s. 5d.. The actual disbursements amounted to £29 12s., including £22 2s. for legal fees. The assets of the Association amount to £1,574 14s. 4d.

Lunacy Service.

THE MENTAL HOSPITALS IN NEW SOUTH WALES.

THE ANNUAL REPORT OF THE INSPECTOR-GENERAL OF MENTAL HOSPITALS OF NEW SOUTH WALES for the year ended June 30, 1922, is of more than usual interest and importance. The year under review differs from its predecessors in several respects. In the first place the opening of the psychiatric clinic, Broughton Hall, with out-patient provisions and facilities for the instruction of students in clinical psychiatry, marks a reform of fundamental importance. In the second place, the appointment of a Professor of Psychiatry at the University of Sydney is a signal of the recognition of the need for the adequate training of students in psychiatry. The third event is the appointment of a Royal Commission to inquire into the whole matter of the law relating to the insane and its administration. This inquiry is the outcome of a demand made by a small section of the community for the institution of various reforms in the method of certification and control of the insane. The Inspector-General of Mental Hospitals has for many years urged the Government of New South Wales to amend the *Lunacy Act* to provide for the more effective treatment of persons suffering from mental disease in a form amenable to treatment. Reference to this subject is made in the report. Further details will be given in this review.

The Insane.

The number of persons under "official cognizance" on June 30, 1922, was 7,997. This number is fifty-five more than the number of persons on the same day of 1921. Of these persons, 7,524 were actually in hospitals, while the remainder were on leave. It is pointed out that, while the average annual increment of persons under care during the last twenty years is 153.75, the increase for the year under review is only 113. In 1919 there was a decrease. These figures, being actual and not relative, do not convey a reliable impression of the frequncy of mental disease nor of its increase among the population. It should be pointed out that official figures have regard and can only have regard to persons certified as insane. It has been stated that insanity is a legal term, while mental disease is a medical one. It is certain that the official figures reflect something quite different from the incidence of mental disease. In the community there was last year one officially insane person to every 266 supposedly sane persons. In the course of the twelve months under review 1,477 admissions were recorded. This figures includes 1,236 persons admitted to the mental hospitals for the first time and 241 so-called "re-admissions." Whether there were 241 persons or whether some of the 1,236 were re-admitted during the twelve months is not stated. The ratio of the number of admission to the population, spoken of as the "occurring insanity," is one in 1,448. If none of the persons re-admitted during the twelve months is included among those admitted for the first time and if no one person was admitted more than once, the persons admitted would represent 17.65% of the total number of patients in the mental hospitals. Again, 1,396 persons left the institutions. Of these, 781 were discharged, including 614 said to have recovered, by which is meant that recovery from the particular attack of mental disease had occurred, nine escaped and 606 were released by death. It thus appears that 9.3% of the total number of patients in the mental hospitals obtained their discharge during the twelve months. The public probably does not realize that there is so large a movement in and out of the mental hospitals in relation to the total number. The recovery rate, that is, the ratio of persons discharged free from immediate signs of mental disease to the number of admissions, is 41.57%. This method of calculation may be useful for the purposes of comparison, but is apt to convey a false impression in that it has no significance as an index of the prospects of recovery of the patients certified as insane.

The number of deaths is 606. Dr. Sinclair expresses this figure for the sake of comparison in ratio to the average number of patients in the hospitals throughout the twelve months. He is probably wise in adopting this ratio rather than the formula of the Registrar-General,

since the stationary population is much greater than the moving. The rate is 8.21%, which is 0.14% more than the previous year.

Leave and "French Leave."

On June 30, 1921, no less than 458 persons were on leave of absence. This may be regarded as a sort of trial freedom granted to persons whose symptoms have so far disappeared as to justify the hope that their troubles are temporarily or permanently at an end. During the twelve months 1,201 persons were granted leave of absence. Of the total 1,659 persons, 449 were discharged while on leave, 715 were required to return to the hospitals and ten died. The remaining 473 were still on leave at the end of the period.

Seventy-one patients walked out of the hospitals without leave. They were followed and sixty-two were captured and brought back. None of the nine who made good their escape, was dangerous and all were allowed much freedom as a therapeutic measure. A modern mental hospital is obviously not a prison, like the asylums of old.

Overcrowding.

Notwithstanding urgent appeals in every report of the Inspector-General for many years, the Government of New South Wales cannot find money to erect another hospital to relieve a very serious state of overcrowding. The aggregate number of beds in the nine institutions is 6,520. Accommodation had to be found for 7,389. It is little less than scandalous that a government that can engage in trading ventures and waste the money of the public in a hundred ways, does not fulfil its obligations to a class of persons unable to help themselves. In every country the insane are housed and safeguarded for the public safety at the public expense. The chances of recovery are limited by inadequate accommodation and overcrowding.

The Criminal Insane.

There is a tendency abroad to regard the insane person who commits a crime, as deserving less consideration than an insane person not addicted to violence. The public seem to have difficulty in realizing that in certain mental disorders the control over conduct is lost and no responsibility can be attached to the individual. In these conditions every effort should be made to restore the lost control, or, if this be unavailing, to keep the unfortunate victim of a terrible disease in safety and comfort. The neglect of the Government to provide a suitable hospital for this class of patient, notwithstanding repeated intimations to the effect that the building formerly reserved for these patients was quite unsuited to the purpose, is deplorable. This building has now been taken over by the authorities of the Parramatta Gaol and many of the patients have to be held in prison. The Inspector-General of Mental Hospitals repeats a sensible suggestion that the Industrial School for Girls at Parramatta should be handed over to be used as a hospital for the criminal insane and a new, more suitable building erected for the inmates of the industrial school.

The Reception House.

The three reception houses may be regarded as the filters for the insane. Patients under certificate in accordance with the provisions of the *Lunacy Act* and persons brought by relatives and others on account of the existence of symptoms indicating some form of insanity are required to pass through the prescribed formalities. Those persons who are on remand from the magistrate's court, are kept under observation and treatment as long as the law permits, when there is a prospect of speedy restoration of mental control. In this institution the diagnosis made elsewhere is revised and, if necessary, corrected by the experts of the Department. Of 1,686 persons admitted to the three institutions, 613 were discharged, while 1,075 were sent to mental hospitals or licensed homes. Five patients died at the Reception House at Darlinghurst. There were fourteen in the institutions on the first day of the year and five remaining on the last day. It will be recognized that the procedure offers those in charge an opportunity of making a thorough investigation of the case of each patient admitted and of adopting modern methods of treatment without loss of time and without transfer to the great mental hospitals.

The Psychiatric Clinic.

Adjoining the Reception House at Darlinghurst there was an institution known as the Mental Hospital, Darlinghurst, for the accommodation of voluntary patients not under certificate. This institution was closed soon after the Psychiatric Clinic, Broughton Hall, was opened.

Within the grounds of the Callan Park Mental Hospital is a commodious, well planned and appointed hospital for the reception of voluntary patients. The ward accommodation is entirely satisfactory and will compare favourably with similar institutions in any other country. The atmosphere of the institution is that of a hospital. The depressing element of the old-time asylum has been eliminated and in the place of hopelessness of outlook and enforcement of control, there is a cheerful optimism. The patients are there to get better and they soon respond to the means adopted to that end. The majority of the patients seek admission of their own accord on the advice of their medical attendant. Some come on the recommendation of friends or relatives. No one is held in the hospital against his or her wish and the only restraint exercised is that obtaining for disciplinary purposes in every public hospital. There is an out-patient department at which persons suffering from the milder or early forms of certain psychoses and neuroses can receive skilled treatment. At present three wards are in occupation. A fourth ward will be added in due course. The various departments, such as massage rooms, rooms for physical treatment, baths of various patterns, work rooms and so on, are of greater therapeutic value than the pharmacy. The institution is under the immediate care of Dr. Sydney Evan Jones, while Professor Sir John Macpherson acts as visiting and consulting physician as well as teacher. Students are to undergo a course of psychiatry with compulsory attendance at the clinic. The Inspector-General is to be congratulated on his splendid achievement in establishing this admirable institution, the first of its kind in Australia and one of the best in the world. There were nine patients in the hospital when it was opened; at the end of the year there were sixty-one. We feel sure that it will prove of enormous value to patients whose mental disease can be treated successfully in the early stages in a favourable environment. It will also serve an important function in enabling Professor Sir John Macpherson to impart sufficient knowledge concerning psychiatry to the students of the Sydney University to enable them to recognize the various forms of mental disease in their patients when they become medical practitioners.

Proposed Amendment of the Lunacy Act.

A short chapter is embodied in the report on the amending Bill in the hands of the Minister of Public Health. The chief provision of this measure is the recognition of three classes of patients. The first includes those who are amenable to treatment without powers of detention being required as a necessary condition of their admission. These patients should be treated in general hospitals or in special hospitals. The second class comprises patients whose condition demands detention in a special hospital. The third class is to embrace those patients who must be subjected to the usual restraint enforced in the mental hospitals. It is not proposed to relax the strictness of the arrangements for safeguarding patients whose disease is not or not readily amenable to treatment. The legal recognition of patients suffering from mental disease in a form amenable to treatment without certificaton is a step forward. It is proposed that powers should be granted to the authorities to exercise restraint if it should become apparent that this course is in the interests of the patient.

Other Items.

The report contains much further information concerning the insane, the institutions provided by the State for their custody and the inebriates. It is unfortunately impossible to provide space for a summary of this important information. Much, very much has been achieved for the benefit of the persons suffering from mental disease and pathological processes associated with a disturbance of the higher or psychic functions. Much has still to be done. The shortcomings of the Department must be attributed to the failure of the Government to provide money and adequate accommodation to enable the medical service to extend its usefulness to the extreme limits of modern psychiatry.

Public Health.

THE ROCKEFELLER FOUNDATION.

THE ANNUAL REPORT OF THE ROCKEFELLER FOUNDATION FOR THE YEAR 1921 is a bulky volume, much larger than those that have preceded it. It is at once a powerful piece of propaganda for prevention of disease as compared with curative work and a detailed record of the achievements of an organization of immense importance. Mr. George E. Vincent, the President, gives a review or introductory *causerie* covering sixty-six pages. He enumerates the manifold activities of the Foundation and leaves the detailed record to the Directors of the International Health Board, of the China Medical Board and of the Division of Medical Education. In the course of his very instructive dissertation he quotes a successful American health officer: "Cure looks through the microscope, prevention through the telescope." With this as his text he delivers an admirable sermon on the paramount importance of preventive medicine, recognizing the while that this field of medical activity is still much less attractive to the young graduate in medicine, both in regard to emoluments and from the point of view of professional status. He calls attention to the fact that the number of the health workers has increased within recent years to a formidable army in the United States. In 1921 there were two hundred officers in the United States Health Service, four hundred and seventy responsible officers employed by the States, municipal councils and county authorities, five hundred "subsidiary" officers, one thousand two hundred laboratory workers in the public health laboratories, three thousand plumbing, sanitary, dairy and food inspectors and five thousand public health nurses employed by public agencies. It should be mentioned that all these persons are giving their whole time to this work of preventive hygiene. He deplores the lack of facilities for professional training in the science of the prevention of disease. Of the responsible heads of the health departments of seventy-two municipalities and forty-eight States 101 out of 111 medical practioners have had no special training in public health, while only three engineers with public health training are employed. There are approximately ten thousand persons engaged in public health work in the United States and he estimates that the number of those engaged similarly in Great Britain is about the same. In every country there is an increasing demand for competent men and women in this field of activity. During the next ten years there will be a need for twenty thousand workers. It may be asked how Australia stands. Even if allowance be made for the size of the population, the Australian figures are highly unsatisfactory. Medical officers, sanitary inspectors, laboratory workers and nurses engaged in preventive work may aggregate two hundred, all told.

In another section of his review, the President makes the statement that a public function which calls for technical expertness, is hopelessly handicapped if it be treated as the spoils of a political boss or of a victorious party machine. Every hygienist and every medical practitioner will endorse this view. But it is pointed out that the preservation of the public health is a proper and important subject for public attention and discussion. The people have a responsibility which must not be evaded, for the hygienist, be he a governmental servant or an independent practitioner, will be powerless to achieve what can be achieved, unless he has the active backing of the public.

One of the problems which the International Health Board has sought to solve, is that connected with the training of medical men and women for this important, national work. In 1916 the Board approached the Johns Hopkins University with the request that it assume responsibility for establishing a school of hygiene and public health. The Rockefeller Foundation undertook to provide the money necessary to erect, equip and maintain the school. In 1918 this school started its career in temporary premises and courses were instituted in hygiene. Arrangements were made for the granting of degrees of Doctor of Public Health, Doctor of Science in Hygiene and Bachelor in Public Health, as well as a certificate in public health. Fifty-six students entered in the academic year 1920-1921 for the degree or certificate course, while sixty-six other students were enrolled. A special six weeks' course was given for health officers. The President gives an admirable *résumé* of the aims, scope and machinery of the school. Some clear illustrations depict the students at work in the several departments. It is worthy of note that *The American Journal of Hygiene* has been established under the auspices of this school.

The Harvard University has followed the lead and has now courses in public health training. Formerly this university, together with the Massachusetts Institute of Technology conducted courses in preventive medicine and sanitary engineering. The present course is more complete and better adapted to the needs of students. The subject of industrial hygiene has also been included in the Harvard course. The investigations undertaken by workers at the Harvard University in connexion with fatigue, occupational diseases, the sanitation of mines and industrial plants and so on, have involved the cooperation with manufacturing establishments. In this way the students have been enabled to gain first-hand information concerning the sanitary and hygienic administration of factories and large business organizations. *The Journal of Industrial Hygiene* has been founded under the auspices of the Harvard Medical School. Still later the School of Hygiene at Harvard was reorganized and emancipated from the other departments of the medical school with the aid of funds provided by the Rockefeller Foundation.

The President touches on many other matters in a very interesting way. The ground covered, however, is so extensive that it is impossible to follow him in this short summary.

Yellow Fever.

In the report of the Director of the International Health Board, the first subject mentioned is that of the campaign against yellow fever. Formerly yellow fever devastated Brazil as far south as Rio de Janeiro, Central America, Mexico, the West Indies and a stretch in the United States. Epidemics also attacked parts of West Africa and the infection even reached England, France, Spain and Italy. By 1920, thanks to international effort, the infection had been beaten back to a thin belt of costal region west and east of Central Ameriea, extending southwards for a considerable distance on both coasts and northwards along the western coast of Mexico. It is true that only a few cases were encountered. In 1921, the work of attacking the infection was continued. The coast from Panama to Callao, in Peru, was treated as a unit. No infections could be discovered in Buenaventura, in Columbia, while Ecuador has been free from yellow fever since May, 1919. An epidemic occurred in 1920 in the department of Piura, during the course of which six thousand people became infected. By August the measures taken to control the mosquito proved effective, but the infection had escaped into the department of Lambayeque. Thence it spread to Libertad. It is estimated that between ten and fifteen thousand infections occurred. The International Health Board associated itself with the Government and systematic operations were rapidly instituted. All efforts were concentreated on the control of stegomyia breeding. Fish were employed to devour the eggs and larvæ of the mosquito. Other measures were found to be impossible of fulfilment in the large area. The fish method, however, sufficed and on July 16, 1921, the last infection was notified. The control measures have been continued as a precautionary act and it was planned that the entire distance from Ecuador to Callao should be included.

Further activity has been developed in Salvador, Nicaragua, Guatemala and Honduras. This centre of infection was first attacked in 1920 and by the end of 1921 the war on the mosquito had yielded the best results. The measures employed were the permanent sealing of domestic water tanks and the use of larvæ-devouring fish. In Mexico and Central America there were but 145 cases of yellow fever in 1921, as compared with 710 in 1920.

The only other centre of infection in the American continent is situated to the north of Rio de Janeiro, along the Amazon valley. An epidemic occurred in 1912 in the State of Bahia, while outbreaks occurred up the coast as

far as Pernambuco. The campaign is being continued with vigour.

The evidence of the protection afforded by Noguchi's vaccine of *Leptospira icteroides* confirms the previous reports. In one district four hundred persons were vaccinated within the epidemic area in Lambayeque and not one contracted the disease.

Malaria.

The anti-malaria work of 1919-1920 has been continued in several of the States and cooperation between the several health authorities is bearing good fruit. As in the previous year, the top minnow is used extensively for mosquito destruction. It has been shown in several municipalities that the cost of prevention is infinitely less than that of treatment of disease and the economic loss caused by illness. A major attack was begun in 1921 on malaria in the country in several States. This means the adoption of all the measures that have proved of value when tested individually.

Hookworm Disease.

The International Health Board regards the hookworm disease work as a means to an end. While the control of this infestation is a matter of first-rate importance, the measures necessary for its eradication are those which make for health generally. The surveys in various parts of the world have been continued throughout the year 1921, including the survey in New South Wales, Western Australia and Northern Territory. As is well known, this work has been conducted by the Rockefeller Foundation experts, assisted by Australian practitioners, with admirable results. Steps are now being taken by the Federal Department of Health for the continuation of the control work without the aid of the International Health Board. The value of the survey plan is demonstrated in Richmond, Virginia, as a typical example. In 1910 the first survey was taken and it was found that 82.6% of the school children were infected. In the following year the second survey was carried out and it was discovered that the measures adopted had resulted in a fall in the incidence of 35.2%. In 1921, that is, ten years later, the third survey was undertaken and it was found that the infections had dropped to 2.2%. Similar results were obtained elsewhere. Simultaneously with the decline in the hookworm disease incidence there has been a corresponding fall in the dysentery and enteric fever incidence. Much interesting information is given in detail concerning the work in various parts of the world, including the Solomon Islands and Papua. The Willis flotation method of stool examination, devised by Dr. H. Hastings Willis during the period of his activity with the Hookworm Campaign in Queensland, has become the standard method. Carbon tetrachloride promises to become a more efficient drug in the treatment of the disease than chenopodium.

The China Medical Board.

A section of the Rockefeller Foundation is called the China Medical Board. The first step taken by the Board was to establish an institution in China where medical students, nurses, pharmacists and others might receive adequate, scientific education. As a result the old Union Medical College in Peking has been taken over by the Board and a new medical school and hospital has been founded, the Peking Union Medical College. The Board has recognized that ultimately the Chinese must provide their own needs, but under the existing circumstances foreign aid is essential. The staffing of the Medical College has been undertaken on international lines. Dr. Henry S. Houghton succeeded Professor Franklin C. McLean as Director of the College, while American, European and Chinese scientists and clinicians have associated themselves with the undertaking. A distinguished gathering of those interested in the College was seen at the ceremony of the inauguration of the new Director. The teaching staff comprises seven professors, six associate professors, one assistant professor and seventeen associates. In the pre-medical school there are four assistant professors, five instructors and seven assistants. The majority of the Chinese teachers have studied in the United States or in Great Britain. English is the language used for teaching, since Chinese medical terminology is too imperfect for final adoption. The classes are still small, but there is an advantage attaching to this. A full description is given of the buildings and equipment of the various departments. It seems that the architecture is somewhat elaborate and as far as was possible of Chinese form. The laboratories, lecture theatres, class and dissecting rooms and other departments are modelled on western plans. There is a hospital attached to the College with accommodation for two hundred and fifty patients. Up-to-date physical diagnosis apparatus is provided and the laboratories and other departments are provided with electricity for light and power, gas, steam, air under pressure, refrigerating plant and the like. The library is more extensive than usual, owing to the lack of medical reference libraries in Chinese cities.

Assistance has also been given to the Hunan-Yale College of Medicine, which is an admirable school under the deanship of a Chinese graduate of the Yale University. The China Medical Board has interested itself in several other institutions, hospitals and the like and has given financial assistance in certain instances when it appeared that this assistance would lead to progress.

Medical Education.

The last section of the report deals with the activity of the Division of Medical Education. The Director made visits and studied the conditions obtaining in many countries in connexion with medical educaton. The cooperation of the Foundation has been sought for the purpose of improving the medical and public health services in the Philippine Islands. The Foundation has secured the services of Dr. W. S. Carter to act as Associate Dean of the College of Medicine and Surgery at the University of the Philippines. Financial assistance has been extended to the Dalhousie University, Halifax, Canada, for the purpose of establishing a maternity hospital. The Foundation contributed a million dollars toward the endowment fund of the McGill University at Montreal. Many other large sums of money and much expert advice and aid have been given in connexion with other medical educational institutions in various lands. The assistance given toward the rebuilding and organization of the Medical School of the Free University of Brussels has been generous. The gift of over one million pounds sterling for the erection, equipment and endowment of the Institute of Anatomy at University College, London, has already been noted in these columns.

In the last place, mentioned should be made of the numerous commissions and fellowships which the Rockefeller Foundation has established to promote international exchange of medical experience and cooperation in science.

The report contains a vast fund of information in addition to the few points referred to above. It is the record of a monumental work, a work that must stand out in the history of medicine as a unique achievement of coordinated spending of money and applying technical knowledge for the benefit of mankind.

Post-Graduate Work.

SPECIAL LECTURES IN MELBOURNE.

THE MELBOURNE PERMANENT COMMITTEE FOR POST-GRADUATE WORK has made arrangements with DR. J. K. WILKINSON, Honorary Physician to the Melbourne Hospital, to give a course of eight lectures during the coming winter on the disorders of the stomach, the disorders of the duodenum and the disorders of the pancreas, including diabetes. The lectures will be delivered at the Walter and Eliza Hall Institute of Research in Pathology and Medicine, Melbourne Hospital, on Tuesday evenings, commencing at 8.30 punctually. Further details with be announced in due course.

Obituary.

GRACIUS HERBERT BROINOWSKI.

IT is with much regret that we have to record the death of Dr. Gracius Herbert Broinowski on December 27, 1922. Some eleven years ago or more he had a breakdown which was followed by an attack of cholangitis. His recovery was incomplete and his last illness was the result of this prolonged chronic affection.

Gracius Herbert Broinowski was the son of the late G. J. Broinowski, an early settler in Australia, who was well known as the author of "The Birds of Australia." He was born in Melbourne on July 28, 1968. He was educated at St. Ignatius College, Riverview, where he attracted attention on account of his diligence and intellectual qualities. In due course he entered the Medical School at the University of Sydney and had a successful career as a student. He graduated with honours in 1897. He then held a resident appointment at the Royal Prince Alfred Hospital. In the following year he settled at Hay, where he acquired a large practice. He was unsparing in the time and attention he gave to his patients and was rewarded for his energy and enthusiasm, as well as for the kindliness, by the confidence his patients imposed in him. During this phase of his life he developed a taste for operative surgery and acquired much technical skill. He was appointed Honorary Surgeon to the Hay Hospital. In 1903 he left Hay and commenced practice at Narrandera. Here again his activities were manifold and his achievements considerable. He continued to work hard at surgery. From the first he was attracted to the hospital, to which he was appointed Honorary Surgeon. Later he became the Senior Surgeon. In the course of time he re-organized the hospital. He designed and built the operating theatre and improved the institution in many other ways. While his chief interests lay in surgical work, he was a sound physician and no mean bacteriologist. He equipped an excellent little laboratory at Narrandera and undertook a considerable amount of bacteriological and pathological work. Lending aid as a bacteriologist on one occasion during an extensive epidemic of diphtheria, he contributed to its control.

While at Hay he took an interest in local affairs and was soon recognized to be a man of sound common sense and a hard worker. He was elected alderman and it was largely due to his personal energy and advocacy that the water-borne sewerage scheme was adopted. In 1911 his health broke down and he was compelled to take a prolonged rest. In 1914 he was sufficiently recovered again to take up professional work. He sought a place nearer the goal he had in mind. At Randwick he was just getting into his stride when war broke out. He volunteered for active service, but was rejected on account of the state of his health. He placed his laboratory with its contents at the disposal of the authorities for the use of the staff of the No. 4 Australian General Hospital, pending the construction of the laboratory within the hospital. His laboratory was used for eight months. On September 9, 1915, he was gazetted Honorary Captain in the Australian Army Medical Corps Reserve. He held classes in home nursing and in Voluntary Aid Detachment work and instructed upwards of three hundred pupils, both at Randwick and in the Sydney Town Hall. In the meantime he conducted private practice and kept up his surgical work. He endeavoured to specialize in abdominal and gynæcological surgery and, had his health permitted, he would, no doubt, have secured an appointment on the honorary staff of one of the metropolitan hospitals in Sydney. Unfortunately he suffered a further relapse in 1917 and was compelled to relinquish his practice for a period of three years. In 1920 he again essayed general medical practice, this time at Hamilton, in Victoria. For the fourth time he made an excellent start and was rapidly gaining a large *clientèle* when the fates were unkind. In 1922 the energetic practitioner became the patient. But neither medical skill nor Nature availed him at all. In December, after much patient suffering, he "went west."

He was a man of varied interests. What he attempted, he did with all his might and acquired skill and knowledge in every attempt. He was a well-read man, an expert photographer, a connoisseur in Australian timbers and an expert cabinet-maker and wood-turner. His friends in the medical profession and outside were many. Much sympathy is felt for his widow, two sons and three daughters who survive him.

Correspondence.

THE SEPTIC TONSIL.

SIR: *Re* the discussion on the above subject I have unearthed the following fable:

In the days that were there dwelt a man named Civis in the City of Melbourne—not in the lands beyond the sea in Bulgaria or Timbuctoo. And Civis did have many and trusty Dogs about his dwelling. The Marauder and Evil-Doer would pass by, saying: "I dare not enter there, for the Dogs would surely rend me in pieces." And so Civis dwelt in peace. On an evil day, however, one of the goodly Dogs fell sick of a foul disease and Civis was sore troubled. He forthwith hastened to Kentus Husius, a wise man who feared not to speak his mind, and sought his advice concerning the sorry Dog. And Kentus Husius in his great wisdom did say: "The goodly Dog was aforetime unto thee a protection and he is now a menace; I shall destroy him forthwith, lest thou thyself also fall sick of his foul disease." And the wise and strong man did slay the Dog with his mighty Sluda and utterly cast him out. And Civis was thenceforth protected from harm by his other Dogs and did again dwell in peace.

Yours, etc.,

C. F. TUCKER.

Brighton, Victoria,
January 21, 1923.

RADIUM TREATMENT.

AN institution called The Radium Bureau has recently been formed, with Mr. J. P. Trainor as manager, for the purpose of lending radium to medical practitioners. A parcel of radium bromide contained in five needles has just been received from the Radium Chemical Company, of Pittsburgh, Pennsylvania, United States of America. The parcel contains five needles enclosed in brass cases, each tube carrying just over ten milligrammes of radium element in the form of radium bromide. The total quantity of radium salt is therefore 95.5 milligrammes. The parcel was brought to the office of THE MEDICAL JOURNAL OF AUSTRALIA with the seals of the National Bureau of Standards, the official American testing department, intact. Each case with its enclosed container and needle was examined and the numbers and marks identified with the official certificates. We have satisfied ourselves that the five needles are those certified by the National Bureau of Standards as containing just over ten milligrammes of radium element each.

In the United States radium is lent commercially at a charge of five cents per milligramme-hour. This would represent a daily rental of about £24 for one hundred milligrammes of radium bromide. The Radium Bureau proposes to place their radium at the disposal of the medical profession at a considerably lower charge than this. One or more of the needles in suitable applicators will be sent in registered packages to any medical practitioner in the Commonwealth desiring to use radium in the treatment of malignant or other disease, on receipt of an application addressed to the manager of the Radium Bureau. The address of the Bureau is 15, Castlereagh Street, Sydney. It is requested that the needles be returned as promptly as possible after use and that great care be taken to return each needle in its proper brass case. We understand that as soon as the requirements of medical practitioners have been ascertained, arrangements will be made with the larger metropolitan hospitals in Sydney and elsewhere to lend the radium at a nominal charge for short periods of time. We are convinced that this undertaking will prove itself to be of very great value to the medical profession and to patients who are suffering from affections amenable to treatment by radium irradiation.

Notes on Books.

We learn that Jonathan Cope, of Gower Street, London, has undertaken the publication of a book by Dr. Charles MacLaurin entitled "Post Mortems: Essays, Historical and Literary." The volume will be through the press in February, 1923. The essays include a few that have charmed the readers of THE MEDICAL JOURNAL OF AUSTRALIA within the past few years. The literary merit of these disquisitions, as well as their intrinsic value as psychological studies, will undoubtedly secure for the volume a considerable popularity.

Books Received.

L'INFECTION BACILLAIRE ET LA TUBERCULOSE CHEZ L'HOMME ET CHEZ LES ANIMAUX; PROCESSUS D'INFECTION ET DE DÉFENSE ÉTUDE BIOLOGIQUE ET EXPÉRIMENTALE, par A. Calmette; Deuxième Édition; 1922. Paris: Masson et Cie; Royal 8vo., pp. 644, with 31 figures in the text and 25 coloured plates. Price: Frs. 50 net.

Medical Appointments.

DR. R. A. DART, a graduate of Sydney University, has been appointed Professor of Anatomy to the Medical School of the University of Witwatersrand, South Africa. Dr. Dart graduated in 1917 and subsequently served with the Australian Army Medical Corps in France. On demobilization he was appointed Demonstrator of Anatomy at University College, London. In 1920 he was appointed to a research fellowship in anatomy by the Rockefeller Foundation.

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DR. L. R. COOK (B.M.A.) has been appointed Government Medical Officer at Hay, New South Wales.

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DR. ALBERT CURTIS (B.M.A.) has been appointed Acting Superintendent of the Hospital for the Insane and Receiving House at Ballaarat, Victoria.

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DR. JOHN POLLOCK (B.M.A.) and DR. W. B. REID (B.M.A.) have been appointed Public Vaccinators at Sorrento and Bacchus Marsh respectively in Victoria.

* * * *

DR. H. K. FRY (B.M.A.) has been appointed an Official Visitor to the Mental Hospital at Parkside, South Australia.

* * * *

THE undermentioned have been appointed Resident Medical Officers at the Adelaide Hospital: HERBERT FRANZ ALTMANN, ANNIE WINIFRED CLARK, HARRY MEDCALF FISHER, ALAN FRANK HOBBS, GILBERT EDGAR JOSE, EUGENE MCLAUGHLIN, ISAAC BARNET SOLOMONS, DONALD JAMES ROBERT SUMNER, FREDERICK EDWARD TERRILL, ARTHUR LIDDON WEBB, ESMOND FRANK WEST.

* * * *

DR. LUTHER MORRIS (B.M.A.) has been appointed as a Trustee of the Reserve for Ambulance Brigade Purposes, Gympie, Queensland.

* * * *

DR. A. W. ST. LEDGER (B.M.A.) has been appointed Government Medical Officer at Cunnamulla, Queensland.

Medical Appointments Vacant, etc.

FOR announcements of medical appointments vacant, assistants, *locum tenentes* sought, etc., see "Advertiser," page xviii..

"LADY DAVIDSON" RED CROSS HOME, TURRAMURRA: Medical Superintendent.

THE HOOKWORM CAMPAIGN: Medical Officer in Charge of Field Unit.

Medical Appointments: Important Notice.

MEDICAL practitioners are requested not to apply for any appointment referred to in the following table, without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, 429, Strand, London, W.C..

BRANCH.	APPOINTMENTS.
NEW SOUTH WALES: Honorary Secretary, 30 - 34, Elizabeth Street, Sydney	Australian Natives' Association Ashfield and District Friendly Societies' Dispensary Balmain United Friendly Societies' Dispensary Friendly Society Lodges at Casino Leichhardt and Petersham Dispensary Manchester Unity Oddfellows' Medical Institute, Elizabeth Street, Sydney Marrickville United Friendly Societies' Dispensary North Sydney United Friendly Societies People's Prudential Benefit Society Phœnix Mutual Provident Society
VICTORIA: Honorary Secretary, Medical Society Hall, East Melbourne	All Institutes or Medical Dispensaries Australian Prudential Association Proprietary, Limited Manchester Unity Independent Order of Oddfellows Mutual National Provident Club National Provident Association
QUEENSLAND: Honorary Secretary, B.M.A. Building, Adelaide Street, Brisbane	Brisbane United Friendly Society Institute Stannary Hills Hospital
SOUTH AUSTRALIA: Honorary Secretary, 12, North Terrace, Adelaide	Contract Practice Appointments at Renmark Contract Practice Appointments in South Australia
WESTERN AUSTRALIA: Honorary Secretary, Saint George's Terrace, Perth	All Contract Practice Appointments in Western Australia
NEW ZEALAND (WELLINGTON DIVISION): Honorary Secretary, Wellington	Friendly Society Lodges, Wellington, New Zealand

Diary for the Month.

FEB. 7.—Federal Committee of the British Medical Association in Australia.
FEB. 8.—Federal Committee of the British Medical Association in Australia.
FEB. 8.—Victorian Branch, B.M.A.: Council.
FEB. 9.—Queensland Branch, B.M.A.: Council.
FEB. 9.—South Australian Branch, B.M.A.: Council.
FEB. 13.—New South Wales Branch, B.M.A.: Ethics Committee.
FEB. 14.—Victorian Branch, B.M.A.: Branch.
FEB. 14.—Western Australian Branch, B.M.A.: Council.
FEB. 20.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
FEB. 22.—South Australian Branch, B.M.A.: Branch.
FEB. 22.—Brisbane Hospital for Sick Children: Clinical Meeting.
FEB. 23.—Queensland Branch, B.M.A.: Council.
FEB. 23.—Central Southern Medical Association, New South Wales: Goulburn (Annual).
FEB. 27.—New South Wales Branch, B.M.A.: Medical Politics Committee; Organization and Science Committee.
FEB. 28.—Victorian Branch, B.M.A.: Council.

Editorial Notices.

MANUSCRIPTS forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary be stated.

All communications should be addressed to "The Editor," THE MEDICAL JOURNAL OF AUSTRALIA, B.M.A. Building, 30-34, Elizabeth Street, Sydney. (Telephone: B. 4635.)

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